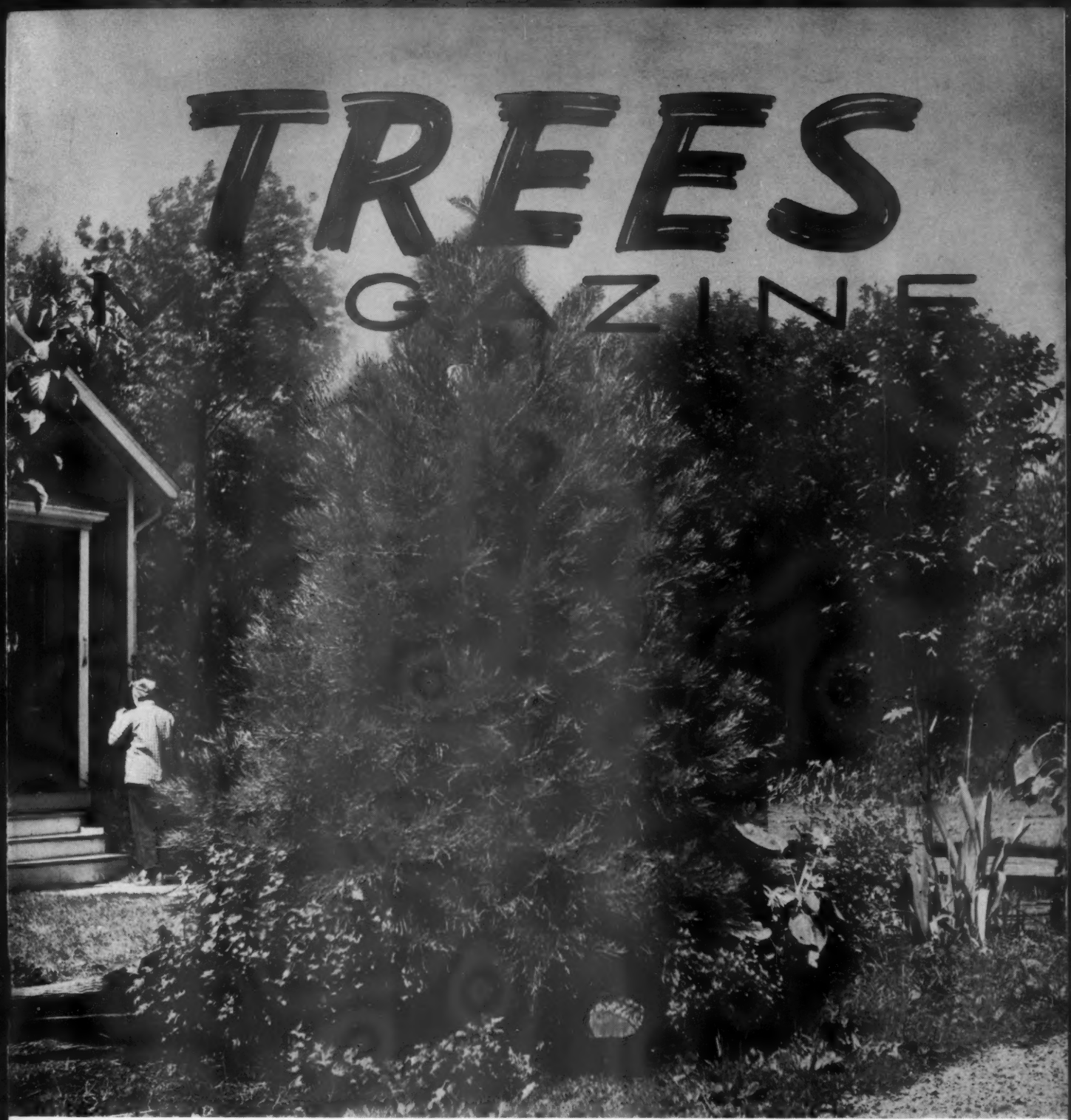
TREES MAGAZINE



Sequoia Gigantea At The Rancho

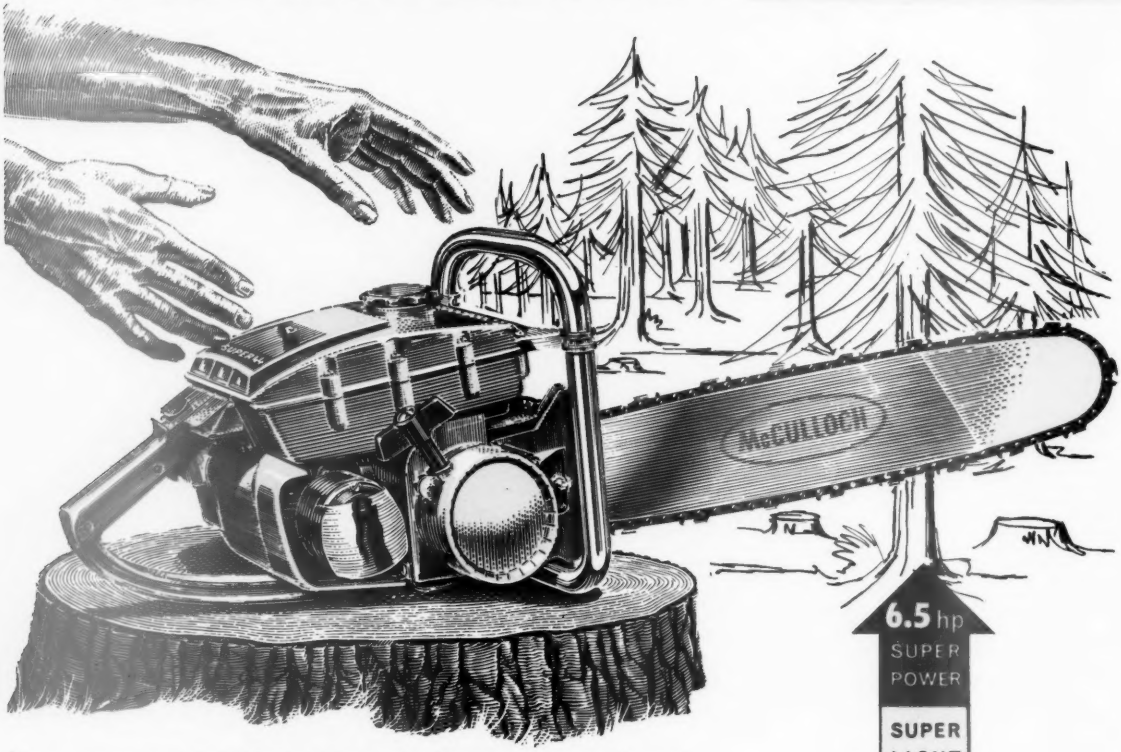
Connecticut Arborists Short Course – University of Connecticut, Storrs, Oct. 3, 1957

Asiatic Maples: Their Propagation—Cuttings ***Roger G. Coggeshall***

Drop-Crotch vs. Shear Trimming For Clearance ***Frank E. Graham***

Sept.-Oct., 1957 *The Journal of American Arboriculture* Vol. 17. No. 6

TRY THE SAW THAT BREAKS THE POWER BARRIER... THE McCULLOCH SUPER 44!



Now you can cut wood faster and easier than you've ever thought possible with the direct-drive saw that packs more power-per-pound than any other—the Super 44 by McCulloch!

TOPS IN PERFORMANCE / TOPS IN FEATURES

- Greatest power (6.5 hp) at lightest weight (19 lb)
- Cuts fast with just fingertip pressure
- Dyna-balanced to let you cut *more* without tiring
- Extra convenient keyboard arrangement of controls, including automatic-reset choke
- Automatic rewind starter and servo action clutch
- Fastest, smoothest cutting Pintail chain outlasts ordinary chain up to 20%

ALSO SEE OUR MAC 35—NOW ONLY **$165** f.o.b. factory

McCULLOCH

McCULLOCH MOTORS CORPORATION
LOS ANGELES 45, CALIF. • *Divisions: Scott-Atwater Mfg. Co., Minneapolis, Minn. McCulloch Co. of Canada, Ltd., Toronto, Ont.*

win a **FREE** saw!

Nothing to buy...see your nearest McCulloch dealer for a Saw-Draw entry blank.

Find Your Nearest Dealer in the Yellow Pages

5-7020-D

TREES Magazine is a bi-monthly Journal published at Olmsted Falls, Ohio by Edward H. Scanlon, and is devoted to the furtherance of the technical and business administration of Trees (Street and Ornamental); Parks Municipal and National); and Forests (State, National and Private), in the U. S. Scanlon Publishing Co., 7621 Lewis Rd., Olmsted Falls, Ohio. Subscription by mail $2 per year; outside United States, $2.50. Advertising rates upon inquiry. Closing date for advertising copy—10th of month preceding date of issue. Unsolicited manuscripts must be accompanied by return postage.

ALONG THE WAY With .... EDW. SCANLON

■ At THE RATE our CALIFORNIA REDWOOD (S. gigantea) is growing, FIVE FEET OF TERMINAL GROWTH this summer, (honest) we expect to be able TO CUT A ROAD through it in ABOUT 1700 years. People sure love it —TOO BAD IT WON'T GROW just anywhere in the East.

■ **Several readers have written suggesting a "LETTERS TO THE EDITOR" page—so if it's agreeable and you have any FIT TO PRINT gripes, suggestion, spray formulas, or SHORT CUT TRICKS let's have them and we'll SEE WHAT HAPPENS.**

■ We are SORRY TO LEARN of the passing of another old SHADE TREE CONFERENCE stalwart—VIRGE COOPER OF BATTLE CREEK PASSED AWAY on July 3th. VIRGIL had been CITY FORESTER of Battle Creek and also at one time conducted HIS OWN TREE BUSINESS.

■ **PHIL, the indefatigible traveler, BARKER has now parked HIS FOOT LOCKER in the DEPT. OF LANDSCAPE MANAGEMENT, University of California, at Davis. PHIL'S TITLE is "LECTURER AND JUNIOR SPECIALIST." Look out for those Juniors PHIL.**

■ The SHADE TREE SELECTION COMMITTEE of the N.S.T.C. has in preparation a TREE USE SERIES, which we think will be the MOST IMPORTANT TREE STEP made in this country since DON WYMAN'S "Trees For American Gardens" took TREES OUT OF THE WOODS—if you know what I mean.

■ **The subjects of the TREE USE SERIES will be selected from the "RECOMMENDED—" list prepared three years ago for the FIRST STREET TREE & UTILITY CONFERENCE. Each of the SIX MEMBERS—Henry Skinner—Jake Gerling—Charlie Young** —Harold Perkins—Maunsell van Rens**sellaer, and Yours Truly, Chairman—have EACH ELECTED 9 TREES with which TO COMMENCE THE SERIES.**

■ EACH TREE in the SERIES will be TREATED FULLY—origin and background; known enemies or defects; growth habits; PHYSICAL AND ESTHETIC FEATURES, and HOW TO USE to BEST ADVANTAGE.

■ **The SERIES will BE ILLUSTRATED with pix of THE TREE, trunk, FLOWER AND, OR FOLIAGE, a street or other ACTION TYPE PICTURE OF THE TREE. Two subjects, each by A DIFFERENT AUTHOR-MEMBER will be RUN IN EACH issue of TREES MAG. We hope to start IN JANUARY if pix have been collected.**

■ After 100 TREES have been described, A FEW YEARS HENCE—we hope TO PUBLISH the material in BOOK FORM. This should make a very valuable and VERY BADLY NEEDED dendrological study that HAD IT BEEN AVAILABLE 50 years ago WOULD have, or MIGHT HAVE PRECLUDED the commission of HUNDREDS OF MILLIONS OF DOLLARS of TREE MISTAKES on AMERICAN STREETS.

■ **Just AS SOON as we CAN GATHER enough notes FROM YOU LADS, we'd like to START A PAGE on "spray notes"—"WHAT'S WITH THE BUGS" for example. SEND IN SQUIBS or notes on YOUR EXPERIENCES—the kind of MATERIAL—THE DISEASE or insect involved—kind of MACHINE USED, etc. You can GET A LOT MORE out of such a department than YOU PUT INTO IT.**

Would LIKE TO HAVE the BIG INSECTICIDE MAKERS contribute articles on their 501 million different kinds of SOOTHING SYRUP, but they are RAKING IT IN SO FAST NOW they don't even GIVE A DARN for FREE SPACE—and trying to get THE ONES THAT GET BIG BUSINESS out of the TREE FIELD to SPEND DOUGH for ADVERTISING is like telling YOUR DEAR MOTHER you are about to HIT HER ON THE HEAD with a 2x4—INCREDULOUS. We think THEY OUGHT TO EXPLAIN the way to use THEIR GOOP anyway.

■ **Well kiddies you will GET THIS EDITION of the RANCHO RAMBLER very early. Quite a phenomenon—but about the TIME YOU GET it, Sept. 15, I HOPE, I should be ON MY WAY to the old sod—IRELAND, WHERE ELSE? Then AROUND THE HORN to Holland, Belgium, Poland, Russia, Germany, Austria, France, and England.**

■ I want to GATHER STREET TREE PICTURES and DATA on the OPERATION OF STREET TREE DEPARTMENTS in as MANY CITIES as possible. Expect to take 3 cameras—A 35 M.M.—A 3D, and a ROLLEICORD so I SHOULD HIT on one or the other.

■ **I am anxious to see if the STREET TREE PHILOSOPHY that has BEEN PREACHED IN TREES for the PAST 20 YEARS, that is the use of "TREES THAT FIT" has been in practice over there. They have had HUNDREDS OF YEARS to develop the PROPER FORMS and from what little I CAN LEARN they have USED THEM—so WE SHALL SEE. Should make a MIGHTY VALUABLE COLLECTION OF SLIDES to help drive the IDEA HOME more conclusively OVER HERE.**

■ There's a LITTLE SWITCH now in the plans. Received A VISA from the RUSSIAN EMBASSY to go TO MOSCOW, but DO NOT have one FOR POLAND, where plans called for a change of planes. Have a BETTER ROUTING NOW tho—go by way OF COPENHAGEN, where I will SPEND A DAY, then to STOCKHOLM, about THREE HOURS THERE, then on SEPT 27 LEAVE FOR MOSCOW. Be in MOSCOW 5 DAYS, then to Berlin.

■ **Saw SOME CRABAPPLES in front of the J. P. MORGAN LIBRARY on W. 36th St. IN NEW YORK several weeks ago, and they LOOKED FRESHER AND HEALTHIER than the PLANES AND AILANTHUS that abound in that congested burg. There HAS TO BE A BETTER TREE than the PLANE for such use—it's such a FROWSY LOOKING thing.**

CONTENTS

Vol. 17 Bi-Monthly No. 6

Subscription Price $2.00 Per Year
(Foreign $2.50) 35 Cents Per Copy
TREES MAGAZINE
7621 Lewis Rd., Olmsted Falls, Ohio

The Editors of TREES invite discussions, comments and all type of literary materials pertaining to trees and tree preservation from any person engaged either in the scientific advancement or commercial development of the field.

CONTENTS

Editorial 4
Another View On Tree Use
7th Plant Propagators Society . . 3
4th Conn. Arborists Short Course . 5
Milford French 5
Asiatic Maples: Their Propagation From Softwood Cuttings 6
by Roger G. Coggeshall
"Drop-Crotch" Trimming vs "Shear" Trimming For Line Clearance . . 10
by Frank E. Graham
The Origin and History of The Cultivated Plane Trees (Second of Three Parts) 12
by Hui-Lin Li
Authors and Books 26

■ After HEAVY RAINS up to July 11, we HAD A MONTH of VERY DRY WEATHER HERE, but I have NEVER SEEN so many trees begin TO HURT SO BAD. Dutch elm disease has SPREAD UNCONTROLLED this summer—in these parts.

■ **COVER PICTURE. The Sequoia gigantea shown on the cover has made such phenomenal growth this year we couldn't resist using it on the cover. It has been in its present location since December 25, 1952, when it was planted out of a five gallon can. The tree was one of several obtained in 1948 from Woody Metcalf for a display of Redwoods (also sempervioens) and Dawn Redwoods. It is now eleven feet tall. Just disappearing to the left is the Secretary-Treasurer of TREES.**

■ Just received A BULLETIN from LOUIE CHADWICK that indicates the ARBORICULTURE FILM FUND is way WAY OFF. Come on LETS MOVE INTO the BIG LEAGUE with this BUSINESS OF OURS and start thinking and DOING BIG. For too many years we've been a TWO-BIT OUTFIT and we're NEVER GOING TO CHANGE as long as WE THINK AND ACT five and dime. Unwrap the skins and shell out. This BUSINESS WON'T GROW unless we tell the whole country about it—we NEED THAT FILM, so DON'T BE CHICKEN—give.

7th Plant Propagators Society

Because of space conflicts the 7th annual meeting of the Plant Propagators Society will be held a little earlier than usual Nov. 21 - 23 at the Wade Park Manor in Cleveland.

President this year is Louie Vanderbrook; V. P. Hugh Steavenson, and Secretary-Treas., Dr. Wm. E. Snyder of Rutgers.

Sept.-Oct., 1957 **Journal of the National Arborist Association** Vol. 17. No. 6

EDWARD H. SCANLON, Editor
7621 Lewis Rd., Olmsted Falls, Ohio ADams 5-2357

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; A COUNTRY WITHOUT TREES IS HOPELESS."

ADVISORY COUNCIL

L. C. CHADWICK
Professor of Horticulture
Ohio State University, Columbus, O.

H. DANA BOWERS
State Landscape Engineer
Division of Highways
Sacramento, Calif.

MAUNSELL VAN RENSSELAER
Director, Saratoga Horticultural Foundation
Saratoga, Calif.

NOEL B. WYSONG
Forester, Cook County Forest Preserve, River Forest, Ill.

PAUL E. TILFORD
National Arborist Association
Wooster, Ohio

FORREST C. STRONG
Assistant Professor of Botany
Michigan State College
East Lansing, Mich.

CHARLES F. IRISH
Arborist, Cleveland, Ohio

P. P. PIRONE
New York Botanical Garden
New York, N. Y.

RALPH D. CORNELL
Landscape Architect. Los Angeles, Calif.

CURTIS MAY
Principal Pathologist, Bureau of Plant Industry Station, United States Department of Agriculture, Beltsville, Maryland

KARL DRESSEL
Associate Professor Forestry, Michigan State College, East Lansing, Mich.

MALCOLM A. McKENZIE
Director, Shade Tree Laboratories, University of Massachusetts, Amherst, Mass.

EMANUEL FRITZ
Associate Professor of Forestry, University of California, Berkeley, Calif.

Out On A Limb

ANOTHER VIEW ON TREE USE

Perhaps the most important features of civic embellishment are the boulevards, esplanades, plazas and the use of grass plots, shrubbery and trees on the streets.

Trees and other vegetation are highly desirable features of civic embellishment, and should be employed wherever it is possible to utilize them. They temper the heat and the glare, afford agreeable shade, relieve the eye, improve the air, reduce the violence of the wind and limit the force of the rain, conceal defects and necessary structures, lessen the dust, improve the vistas and offer unending sources of variety and interest.

It is always advisable to have the trees under the control of the municipality, and to have them planned to reinforce the character of the street. Thus, if at the end of a street, a monument or other object is to be viewed, the trees should be of such a type that their branches do not interfere with the view.

plete view, as of some distant mountain or object is desired,

In the denser business districts, or where a rather com-the trees should be of a kind that will not grow large. In other avenues, the trees may be larger, leaving, however, an open space to the sky, as though through a wall of vegetation. In other streets, it will be desirable to have the branches of the trees meet in the middle of the street, thus forming an arch, which may be very high for some purposes, giving an effect of spaciousness to the streets, as with great elms or cottonwoods, or such arches may be low, as with maples.

Most large trees span from twenty to fifty feet on either side of the trunk when their development is unobstructed so that the future appearance of the avenue must be kept in view when such trees are planted. The trees being under the control of the municipality, unsuitable kinds will not be used as would be the case had private owners the option of planting whatever suited them best.

In streets in quiet residential sections, in which architectural features are subordinate, trees may be allowed to grow in their own way, as an effect of individuality is thus obtained, which is lost when the trees are pruned too continuously.

In cities in which it is feasible to plant trees between the car tracks, it should always be done, as they prove in such location of exceptional value. With grass and shrubbery, that side of the track is made more interesting to the passengers, and the tracks are made less unsightly to the general public. The undergrowth absorbs a great deal of the noise as well. When trolley wires are used, the trees conceal the poles, while shrubbery of large size serves to conceal structures of a purely utilitarian purpose.

Depending upon the locality and the desired effect, trees in the business districts are pruned to a greater or lesser extent, often being kept down to ten or fifteen feet in diameter, as is also done on some streets and boulevards and in formal parks, while broad streets and squares they may often be allowed to grow to any size.

In selecting trees for use in streets and in other parts of the city, attention must be paid to the effect to be secured, as some kinds of trees are effective in certain environments but not in others. The Lombardy poplar *(Editor's Note: The*

author is referring to a columnar or fastigiate form—he was undoubtedly unaware that there are many varieties of fastigiate type trees superior to the one mentioned. He had in mind the effect created) for example, is quite out of place on some streets, but highly effective when placed in rows around quays, or on piers, or used as a means of setting off promenades or isolated features, being often employed with remarkable results in island parks and on free approaches.

Another very effective use of trees is that in which a single great tree stands alone or near a church or other structure, and either by itself or with its accompanying structure, is the terminal of a vista. Sometimes two trees may be so employed, but with three or more, the striking effect is lost. Examples of a single tree so used are seen at Oldenburg in the Gertrude Church Yard, where the tree overtops the steeple of the church and at Freiburg at Salz and Herren Streets, where the tree shelters a fountain at the point of branching streets, the tree thus being the focal point of the center.

Trees in cities must receive the best of care, as they are growing under anomolous conditions and are likely to succumb unless constantly looked after.

In selecting trees for city use, in addition to selecting those which are suited to the aesthetic purposes to be attained, the nature and condition of the soil must also be considered and suitable arrangements made for an adequate water supply. This may often be effected by blind drains, laid at the time the tree is planted and regularly filled with water. The system of gutter seepage previously mentioned is also useful.

—By Frank Koester—from his book,
"Modern City Planning and Maintenance,"
published in 1914. The author was a
Civic Engineer.

Fourth Connecticut Arborist's Short Course Thursday, Oct. 3, 1957

9:30 A. M. Registration (No registration fee)

9:45 A. M. "Day Length and its Effect on Trees" Dr. Sidney Waxman, Ass't. Professor of Horticulture, Univ. of Conn.

10:00 A. M. "Salesmanship and the Arborist" Albert Meserve, United Arborists, Danbury, Connecticut.

10:40 A. M. "Vandalism and Other Problems of City Trees" —Carl Schiff, Dept. of Parks, Brooklyn, N. Y.

11:20 A. M. "Improving Tree Feeding Practices" Wallace A. Mitcheltree, Extension Specialist in Soils, Rutgers University, New Brunswick, N. J.

12:30 P. M. Luncheon—Main Dining Hall.

RATCLIFFE HICKS ARENA

1:30 P. M. Demonstration of Wood Chopping and Axe Throwing—David Geer, Jewett City, Conn., National Wood Chopping Champion.

2:30 P. M. Demonstration of Rope Splicing, Tying and Throwing, Plymouth Cordage Co., Plymouth, Mass., and Joe Fennell, Jr., Fennell Tree Experts, Bridgeport, Conn.

The meetings of the Connecticut Arborists Short Course will be held in the College of Agriculture Auditorium. The College of Agriculture building is on Route 195 across the road from the Storrs Congregational Church. Ample parking facilities are to be found at the rear of the Agriculture building. The auditorium is on the ground floor as you enter the rear.

Outdoor demonstrations will be held on campus. The exact location will be posted on the registration table in the College of Agriculture Auditorium.

The afternoon meetings will be held in the nearby Ratcliffe Hicks Arena.

MEALS

The Main Dining Hall is assigned for this conference. It is located west of the library (the building with the gold dome).

COMMITTEE ON ARRANGEMENTS

Connecticut Tree Protective Association, University of Connecticut.

Herbert J. Cran, A. E. Dimond, Victor Jarm, Albert I. Mann, Harold O. Perkins.

Milford French

Milford W. French, one of the country's most beloved and best informed tree experts, passed away Sunday, July 21, 1957 at his home in Richmond, Virginia.

Mr. French had served the City of Richmond as Arborist since 1943, when he was called to take charge of tree repair work following a severe ice storm. Persuaded to stay with the city, he continued to give unstintingly of himself and his knowledge through the storms, hurricanes, droughts and plagues of insects and diseases that attacked the city's 200,000 street and park trees. Most recently he had taken a lead in the fight to save the elms of Richmond from the dreaded Dutch Elm disease.

Before coming to Richmond, Mr. French had his own tree concern in Baltimore, Maryland, the French Tree Expert Company. After 25 years of building up a reputation as the city's leading tree man, he was forced to dissolve the company because of the shortage of manpower during World War II. Previous to having his own company, Mr. French had worked for the Davey Tree Expert Company for a number of years, traveling about the country as a foreman for the Kent, Ohio firm.

Mr. French has long been a familiar figure at the conventions of both the National Arborists Association and the National Shade Tree Conference. He was continually seeking information that would be of help in his work as Richmond Arborist. On the local scene, he frequently set up displays for flower shows and nursery association exhibits and spoke to numerous garden clubs in his spare time in an effort to transmit to others something of his knowledge and love of trees.

DED in Kansas

Although Dutch elm disease has been found in Kansas City, Mo., Hugh E. Thompson of the entomology department at Kansas State College, Manhattan, advises Kansas elm tree growers they should be more concerned about destroying bark beetle breeding material than they are about having their elm trees sampled and cultured for the Dutch elm disease fungus.

"Once a tree becomes infected, it can not be cured. On the other hand, the only way the fungus can get from infected elm wood to a healthy tree is to be carried by elm bark beetles," he explains.

The K-State entomologist suggests that elm tree owners redouble their efforts to destroy beetles by marking all trees or parts of trees in poor condition in which bark beetles are breeding this fall and removing and burning all bettle-infested elm wood during the winter. Next spring while the elms are still dormant, they should be sprayed with a heavy application of DDT emulsion, Thompson says.

ASIATIC MAPLES

THEIR PROPAGATION FROM SOFTWOOD CUTTINGS

By Roger G. Coggeshall
Propagator, The Arnold Arboretum

Since the trend of architecture today is to lower and more compact buildings in both the industrial and residential fields, attention has been focused on trees which at maturity reach a height of only eighteen to thirty feet. The towering elm, maple or oak which were most frequently planted a generation ago tend to give a one-sided appearance to ranch-type houses or the modern one-story facorties. In addition to this, there are two relatively new problems to be met; that of the hurricanes of recent years which destroyed many large trees and caused heavy damage to utilities from falling trees and limbs and the high mortality among our native elms due to Dutch Elm Disease.

Smaller trees would be in scale with new factories and homes. They would be below utility lines at maturity thus decreasing considerably the damage to these lines by acts of nature and they would lessen tremendously the maintenance costs of street tree plantings. They would also be much easier to keep disease- and insect-free.

As interest increased in the use of smaller trees for landscaping and street tree planting, a comparable interest grew in the methods by which these plants could be propagated.

One of the largest groups of "small" trees is a group of plants known as the Asiatic Maples. Though not all maples indigenous to Asia are small, there are a goodly number which at maturity are only eighteen to thirty feet tall. This is quite small when compared with the height of our native Norway, Sugar and Silver Maples, which range from 70 to 120 feet.

In considering the propagation of Asiatic Maples one would assume that the easiest and cheapest way to reproduce these plants would be from seed. This conclusion is certainly true and when seed is available the plants should be propagated from seed. However, many of the maples mentioned herein are found only as specimen plants in botanical gardens and arboretums, certainly not enough plants to supply the quantity of seed necessary for commercial propagation.

In addition to the limitations of a small number of available stock plants, those that are available do not produce a crop of seed every year. Many times two to five years will elapse between good seed years.

It was felt, therefore, that while seed propagation remained a cheap and successful method of reproducing these plants, if a seed supply was available, another method should be found which would be more reliable on an annual basis. With this idea in mind, experimental work was conducted on the rooting of Asiatic Maples from softwood cuttings. The procedure employed and the results obtained were as follows:

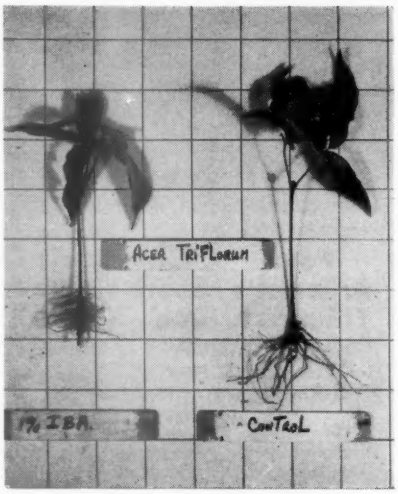
Cutting material was collected, in most cases, from mature plants, 19 to 39 years old, growing in the Arboretum's collections (see Table I). However, in order to obtain a rooting comparison between the cuttings collected from mature plants and cuttings collected from young plants, material was also taken from young seedlings varying in age from two to eight years.

It is a known fact that in some instances cuttings taken from juvenile plants root much more readily than the same type of cuttings taken from mature plants. This statement holds true even when the cuttings collected from both types of stock plants are handled in an identical manner. In the rooting of softwood cuttings of Asiatic Maples the age of the stock plant has a very definite effect upon the rooting results. The older the stock plant, the less successful rooting will be.

In addition to collecting the cutting material from plants of varying ages, cutting material was also collected at different times throughout the growing season, especially during the early spring months. This latter operation was carried out in order to determine what effect, if any, timing had upon the rooting of these cuttings. In three instances the cutting material was collected as soon as there was enough new growth on the stock plants to make a cutting (see Table I).

The cutting material was made up exclusively into tip cuttings. In no instance were the soft terminal leaves pinched out. The cuttings varied from two to five inches in length and contained anywhere from four to six leaves. Once the material had been made up into the proper type of cuttings, the latter were treated with a variety of root-inducing hormones to determine which hormone, if any, was beneficial to rooting.

All of the root-inducing hormones used in this experiment were in powder form and were applied by dipping only the basal end of the individual cutting



Rooted cuttings of Acer triflorum from forced seedling growth. Cuttings rooted in 3 weeks. Controls as good as treated.

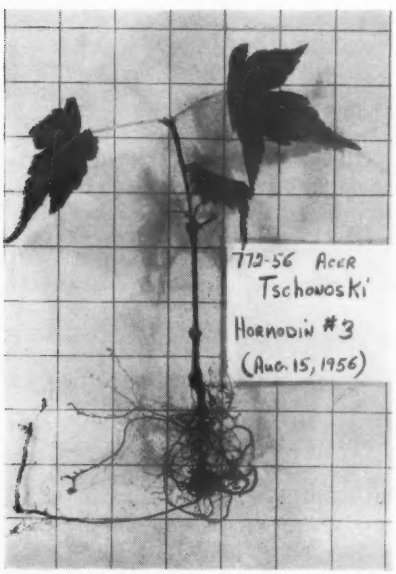
into the dry powder; the ends of the cuttings were dipped into water prior to being dipped into the hormone powder. In spite of the various kinds of propagating material used and the different times throughout the growing season when the cutting material was collected, one hormone concentration consistently gave good rooting results. This was indolebutyric acid in talc at a concentration of 0.8 mg./gm., which is the same concentration as the commercial powder Hormodin #3. A number of other hormone concentrations were tried. Some proved too strong, such as the one and two per cent concentrations of indolebutyric acid in talc, and the green liquid hormone "Chloromone"; others proved too weak, such as the talc preparations of indole-3-acetic acid. For this reason, the only results shown in Tables I and II are those obtained with Hormodin #3.

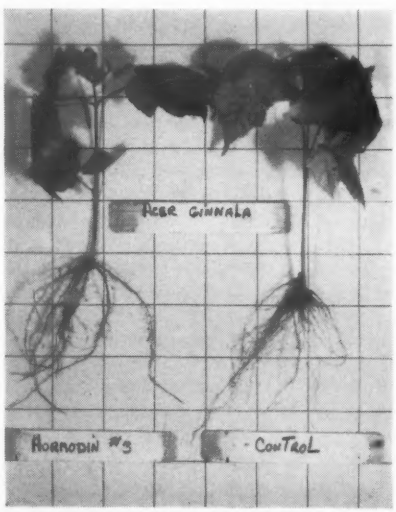
One other point should be stressed here in connection with the root-inducing hormones and that is the practice of wounding. In two instances (see Table I), wounding was employed with very favorable results. As is often the case with material which is hard to root, the practice of wounding definitely stimulates rooting. This is due to the fact that the hormone powder is brought into contact with a greater area of the cambium layer on the wounded surface. By exposing a greater area of the cambium layer to the hormone powder, the

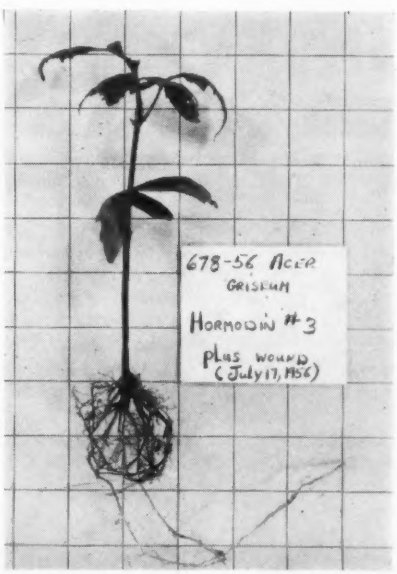
(Continued on page 8)

TABLE I—Rooting results with softwood cuttings taken from mature plants of Asiatic Maples.

Name	Age of Plants	No. of Cuts	Treatment	Results			Date Made	Date Potted	Remarks
				Rooted	Callused	Dead			
Acer barbinerve (Manchuria)	39 years	100	Hormodin 3	87	7	6	8/8/56	10/10/56	Cuttings rooted in flats of sand, due to lack of space in the cutting benches.
Acer buergerianum (China)	19 years	100	Hormodin 3	11	84	5	7/6/54	10/15/54	Very little callus on un-rooted cuttings. Cuttings taken too late.
Acer buergerianum (China)	19 years	100	Hormodin 3	6	92	2	8/16/55	12/29/55	Cuttings callused heavily, but taken too late in the season.
Acer buergerianum (China)	19 years	100	Hormodin 3	19	73	8	8/5/56	11/10/56	Taken too late in the season.
Acer capillipes (Japan)	37 years	100	Hormodin 3 plus wound	91	7	2	8/17/56	10/20/56	Rooting very heavy. Uniform root system. Wounding definitely beneficial.
Acer carpinifolium (Japan)	37 years	100	Hormodin 3	69	14	17	5/23/55	8/10/55	Cuttings badly burned due to lack of shade. Only 2-3 roots/cutting.
Acer carpinifolium (Japan)	37 years	200	Hormodin 3	158	24	17	8/8/56	11/14/56	Possibly better results if the cutting were taken sooner.
Acer cissifolium (Japan)	37 years	100	Hormodin 3	72	24	4	5/11/54	6/13/54	Cuttings were 12"-15" high at the end of the growing season, same season they were rooted.
Acer cissifolium (Japan)	37 years	140	Hormodin 3 plus wound	91	7	2	8/18/55	10/6/55	Good heavy root system. Wounding definitely beneficial.
Acer cissifolium (Japan)	37 years	200	Hormodin 3	56	123	21	8/9/56	8/30/56	Unrooted cuttings dropped their leaves and went into dormancy. Taken too late in the summer.
Acer tartaricum (Western Asia)	26 years	100	Hormodin 3	63	28	9	8/16/55	10/14/55	Very heavy root system (3-8 roots/cutting).
Acer tartaricum (Western Asia)	26 years	100	Hormodin 3	77	11	12	5/10/56	5/25/56	Cuttngs were 6"—10" high at the end of the growing season, same season they were rooted.
Acer tegmentosum (Manchuria)	31 years	75	Hormodin 3	67	4	4	8/15/56	9/17/56	Two-year wood at the base of cutting rooted best.
Acer triflorum (Manchuria)	33 years	100	Hormodin 3	0	83	17	7/9/54	8/10/54	Taken too late in the season. Leaves turned yellow and fell off.
Acer tschonoski (Japan)	39 years	100	Hormodin 3	36	41	23	8/15/56	10/18/56	Cuttings taken too late.







Refer to Tables I, II and III for data pertaining to rooted cuttings shown in the above three photographs. Medium for Acer griseum was sand.

callusing action is speeded up and rooting stimulated.

Wounding was accomplished by removing a small piece of bark and wood from one side of the cutting, at the basal end (see Plate XI). This piece of wood is approximately three-quarters to one inch in length and one-sixteenth to one-eighth of an inch in thickness. The actual cut is not deep, being just deep enough to expose the cambium layer.

In both instances where wounding was employed in conjunction with the rooting hormone Hormodin #3, the results were significant enough to lead one to think that perhaps all of the different kinds of Asiatic Maples in this experiment might have benefited from such a treatment. The answer to this lies in the experimental work scheduled for the spring and summer of 1957.

Following the treatment with different hormone concentrations, plus a wound in two instances, the cuttings were inserted into a medium of coarse sand. This operation was done in two locations. The first was in a six-inch-deep cutting bench where the bottom heat was supplied by a lead cable thermostatically controlled and the second was in a standard greenhouse flat measuring three inches deep, twelve inches across and twenty-four inches in length. Once filled with cuttings, these flats were placed on a greenhouse bench where the bottom heat was supplied by hot water pipes. The heat was retained beneath the cuttings by using polyethylene plastic to enclose the bottom of the benches. The cuttings were then flooded with water and a light wire frame constructed of "turkey wire" was placed over them. These wire frames measured eight inches above the surface of the medium. The "turkey wire" is a number nine gauge and can be purchased in four foot rolls. The individual wire squares are two by four inches. Bought in this size, the wire can be cut and bent into any desired shape or size.

After the wire frames were placed in position over the cuttings, they were covered with sheets of polyethylene plastic in such a manner that the individual sheets overlapped. If the plastic is placed in this way, there is no need of applying adhesives to hold the sheets together. With a large overlap, the individual sheets of plastic stick together quite readily after they have once been moistened. Once covered, the cuttings require little further attention.

Due to the fact that polyethylene plastic retains water vapor while allowing air to pass through, though at a very slow rate, the medium requires no additional watering for a period of from three to five weeks. Naturally, the hotter it is the more rapidly the medium will dry out. However, the plastic will trap heat, especially during the hot summer months, and *this is its biggest disadvantage*. For this reason the shad-

TABLE II—Rooting results with softwood cuttings taken from young seedling Asiatic Maples forced in greenhouse.

Name	Age of Plants	No. of Cuts	Treatment	Results			Date Made	Date Potted	Remarks
				Rooted	Callused	Dead			
Acer buergerianum (China)	2 years	100	Hormodin 3	94	6	—	6/18/56	8/21/56	Cuttings rooted heavily (4-7 roots/cutting).
Acer ginnala (China, Japan)	3 years	100	Hormodin 3	87	13	—	2/2/55	2/23/55	Two to three roots per cutting.
Acer ginnala (China, Japan)	3 years	100	Hormodin 3	92	8	—	3/16/56	4/11/56	Untreated cuttings rooted nearly as well as treated cuttings.
Acer triflorum (Manchuria)	2 years	100	Hormodin 3	77	8	15	2/1/55	2/23/55	Cutting material very soft and succulent.
Acer triflorum (Manchuria)	2 years	100	Hormodin 3	83	11	6	2/11/56	3/21/56	Cuttings rooted very heavily (36 roots/cutting).

TABLE III—Results of preliminary rooting experiments with some hard-to-rot Asiatic Maples.

Name	Lot No.	Age of Plants	No. of Cuts	Treatment	Results			Date Made	Date Potted	Remarks
					Rooted	Callused	Dead			
Acer griseum (China)	10	1	15	Full strength Chloromone plus wound	—	—	15	7/17/56	—	Hormone concentration much too strong. Cuttings all killed by Aug. 1, 1956.
		2	15	Half strength Chloromone plus wound	—	—	15	7/17/56	—	Hormone concentration too strong. Cuttings all killed by Aug. 15, 1956.
		3	15	Hormodin 3 plus wound	5	10	—	7/17/56	8/21/56	Fair root system. (see Plate XII)
Acer grosseri hersi (China)	32		25	1% Indolebutyric acid in talc	10	15	—	9/23/55	10/10/55	Unrooted cuttings heavily callused.
Acer mandshuricum (Manchuria; Korea)	49	1	20	Hormodin 3	1	16	3	5/18/55	10/14/55	Rooted cutting failed to live through winter 1955-56.
		2	10	Control (No treatment)	—	10	—	5/18/55	—	Heavy callus.
Acer miyabei (Japan)	54	1	25	Hormodin 3	—	14	11	5/18/55	—	Heavy callus.
		2	25	Hormodin 2	1	10	14	5/18/55	8/10/55	Lightly rooted.
		3	25	Chloromone (Half strength)	11	—	14	5/18/55	8/10/55	Uniform root system on cuttings.
		4	25	Control (No treatment)	—	16	9	5/18/55	8/10/55	Heavy callus.

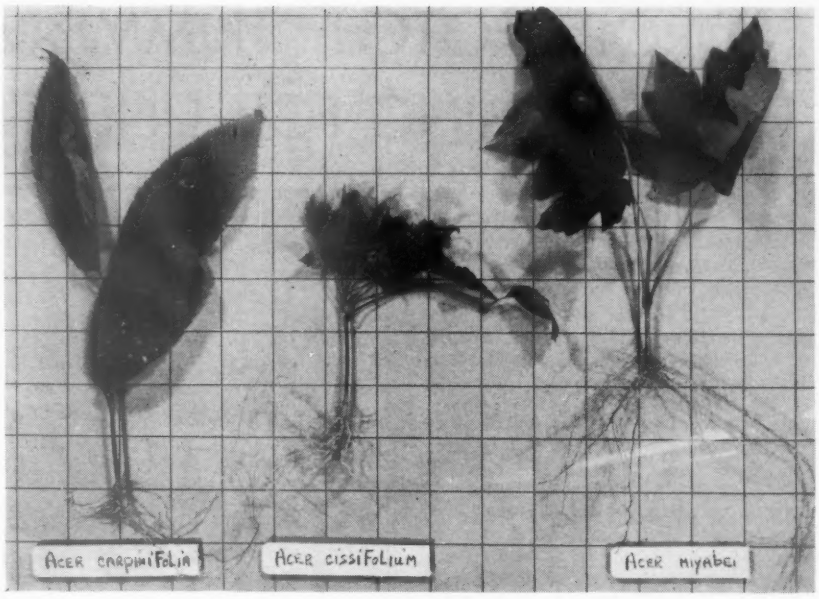
ing conditions must be watched very closely. In general, during the summer weather, the lath shading covering the greenhouses is sufficient to hold the temperature below ninety degrees under the polyethylene plastic. However, when the days are exceptionally hot, ninety degrees and over *outside,* additional shading is required to keep the cuttings from burning. This shading is provided by placing one layer of Saran cloth, of a thickness that allows 52 per cent of the available light to pass through, directly on the plastic cases themselves. This additional shading is provided only from noon to five o'clock.

Once rooted, the cuttings were potted in 2½-inch standard pots. The potting mixture was of a very light texture, consisting entirely of decayed leaves and weeds from a compost pile. Following this, the cuttings were placed on an open greenhouse bench where they were again covered with "turkey wire" frames. During the ensuing 7- to 10-day period, the plastic was taken off a little each day depending upon the weather, so that by the end of this time the plastic had been entirely removed. The wire frames were also removed at this time. This step is extra, one which most nurserymen do not carry out. However, I feel that it is more than worth the extra time involved not only because of the high survival percentages obtained with our newly-potted cuttings, but also because many of the rooted cuttings handled in the above manner will break into growth once they have become established. This is especially true of cuttings taken in the early spring months (see Table I).

After the potted cuttings have been hardened off they remain on the greenhouse benches until the early fall, at which time they are moved either into a pit house or into cold frames. The pit house is unheated and the potted cuttings are over-wintered on open benches, three in a tier each side of the house. If the potted plants are over-wintered in cold frames, they are plunged in sawdust to prevent them from heaving and drying out too fast. The potted cuttings remain in these structures until the following spring, at which time they are planted directly into open nursery rows. Table I lists the results obtained with softwood cuttings taken from mature plants nineteen to thirty-nine years old which are growing in the Arboretum's collections.

In reviewing these results, it is interesting to note that the practice of wounding was very beneficial in the two instances it was tried (*see Acer capillipes* and *Acer cissifolium).* In these two instances, rooting was much heavier on the wounded cuttings than on the cuttings which had been treated with the rooting hormone only.

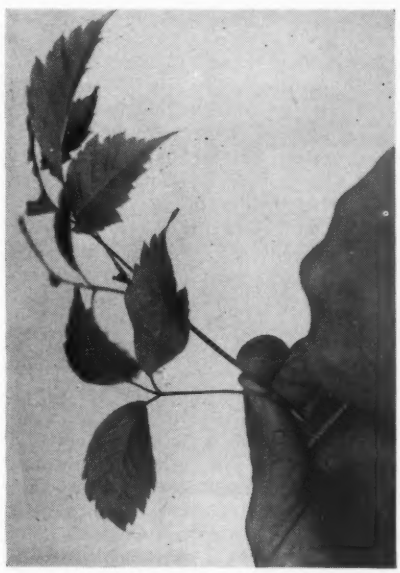
Another observation from Table I based on the rooting comparison between cuttings made in May-June with those made in July-August indicates that most of the cuttings were taken too late in the season for maximum rooting results. Where soft immature wood was used, rooting results were very good. This point is emphasized by the results obtained with *Acer cissifolium* and *Acer tataricum* (see Table I). In these two cases the cuttings were made in May. Not only did they root extremely fast and fairly well, but they also went on to grow during the same season.



Rooted softwood cuttings of various Asiatic Maples. See Tables.

This ability of the cuttings to grow following rooting is one of the most important factors in the use of polyethylene plastic for the propagation of softwood cuttings. Not only does the plastic, with its unique properties, create conditions suitable for the rooting of very soft, immature cuttings, but it also creates the conditions necessary to stimulate the newly-rooted cuttings into vegetative growth. Handled in this manner, the cuttings *in most cases,* will be larger than a seedling of the same species at the end of the first growing season.

Table II shows the rooting results obtained with soft, immature cuttings taken from young seedlings which were forced in the greenhouse. As mentioned previously, these cuttings were taken in order to obtain a rooting comparison between cuttings taken from young stock plants two to eight years of age and those taken from old stock plants nineteen to thirty-nine years of age. The results shown in Table II clearly indicate that while cuttings taken from older plants root fairly well, especially in some instances, the rooting results obtained with cuttings taken from forced young seedlings are far superior. I have never been one to put much stress on the percentage obtained in rooting cuttings since I feel that we do not root sufficiently large quantities of cutting material to quote percentages, but I do feel that if the rooting results indicated in Table II for a specific plant are compared with the rooting results indicated in Table I for the same plant, it is easy to see that the age of the stock plant has a great deal of effect upon the rooting results. *Acer buergerianum* is a good example of this.



Wounding technique employed with Asiatic Maples.

In addition to the favorable rooting

(Continued on page 20)

"DROP-CROTCH" TRIMMING vs "SHEAR" TRIMMING FOR LINE CLEARANCE

By Frank E. Graham,
Supervisor of Line Clearance,
Alabama Power Company,
Birmingham, Alabama

Presented At:
National Arborist Association Meeting
Philadelphia, Pennsylvania
August 26-28, 1957

It is not only a privilege, but a pleasure to present a paper at this meeting concerning line clearing specifications and operation of line clearing crews within the Alabama Power Company system.

Before going into a discussion of this subject, it might be well to mention briefly the nature of the climate, soil and topography of the State of Alabama, and also give you some idea of the distribution of the various varieties of shade trees commonly used in street and landscape plantings. In the state, severe cold weather and freezing temperatures rarely continue longer than 48 hours. In the northern part of the state, the average temperature is about 62 degrees Fahrenheit while in the Southern or Gulf Coast Area the average temperature is about 67 degrees Fahrenheit. The growing season in the northern area is 190 days per year while in the Gulf Coast area it is 280 days per year.

The state has over 200 types of soil distributed over a range of territory 330 miles from north to south. Of the 33 million acres of land in the state, about two-thirds of it is actual or potential forest land. The other one-third is suitable for agriculture or pasture.

The altitude of the state ranges from sea level along the Gulf Coast to 2,407 feet above sea level at the highest point.

The state is drained by 26 rivers and numerous small streams, of which approximately 1,488 miles are navigable during all, or a part of the year.

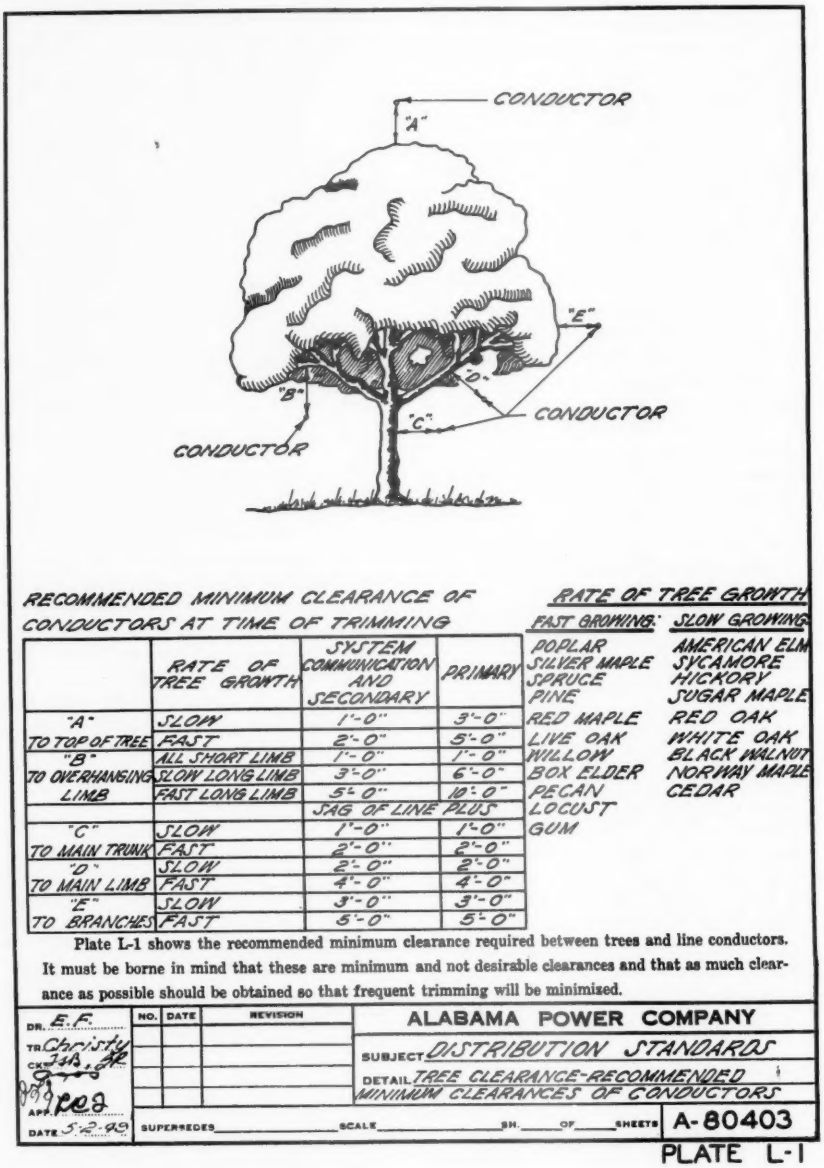
A total of over 4,450 recognized species and varieties of plants are growing without cultivation within the state. Alabama has more species of trees than the whole of Europe.

With this wide range of climate and soil conditions throughout the length of the state, we naturally have a wide diversity in the varieties of shade trees used in various sections of the state. In the Birmingham area, the smooth barked Southern Oaks such as willow, laurel and water are used, along with the American elm and hackberry. In Montgomery and throughout the Black Belt, hackberry, water oak, laurel oak, winged elm and chinaberry are favorites. South of the Black Belt, along the Gulf Coast and especially in Mobile, the live oak is the most popular and widely used shade tree; however, other varieties of oaks, along with sycamore, pecan and mimosa are used as shade trees in this area.

Within the above described area the Alabama Power Company owns and operates over 28,000 miles of distribution lines with primary voltages ranging from 2.3 kv. to 13.2 kv. My responsibility as supervisor of line clearing of distribution lines, with the Alabama Power Company, includes giving general supervision and helping to coordinate the line clearing program over this entire distribution system.

These facts and various conditions have been brought to your attention in order to give you some idea of our native trees and tree growth, the influence they may have on types of clearing and the trimming cycle.

Within the Alabama Power Company



RECOMMENDED MINIMUM CLEARANCE OF CONDUCTORS AT TIME OF TRIMMING

	RATE OF TREE GROWTH	SYSTEM COMMUNICATION AND SECONDARY	PRIMARY
"A" TO TOP OF TREE	SLOW	1'-0"	3'-0"
	FAST	2'-0"	5'-0"
"B" TO OVERHANGING LIMB	ALL SHORT LIMB	1'-0"	1'-0"
	SLOW LONG LIMB	3'-0"	6'-0"
	FAST LONG LIMB	5'-0"	10'-0"
	SAG OF LINE PLUS		
"C" TO MAIN TRUNK	SLOW	1'-0"	1'-0"
	FAST	2'-0"	2'-0"
"D" TO MAIN LIMB	SLOW	2'-0"	2'-0"
	FAST	4'-0"	4'-0"
"E" TO BRANCHES	SLOW	3'-0"	3'-0"
	FAST	5'-0"	5'-0"

RATE OF TREE GROWTH

FAST GROWING: POPLAR, SILVER MAPLE, SPRUCE, PINE, RED MAPLE, LIVE OAK, WILLOW, BOX ELDER, PECAN, LOCUST, GUM

SLOW GROWING: AMERICAN ELM, SYCAMORE, HICKORY, SUGAR MAPLE, RED OAK, WHITE OAK, BLACK WALNUT, NORWAY MAPLE, CEDAR

Plate L-1 shows the recommended minimum clearance required between trees and line conductors. It must be borne in mind that these are minimum and not desirable clearances and that as much clearance as possible should be obtained so that frequent trimming will be minimized.

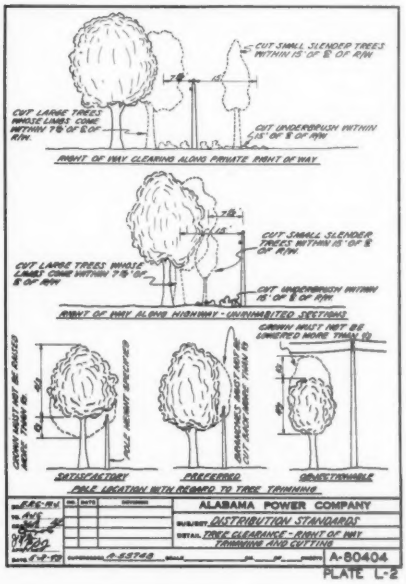
DR. E.F. TR Christy CK Jas. A.R. APP. [illegible] DATE 5-2-29

NO. | DATE | REVISION

ALABAMA POWER COMPANY
SUBJECT DISTRIBUTION STANDARDS
DETAIL TREE CLEARANCE-RECOMMENDED MINIMUM CLEARANCES OF CONDUCTORS
SUPERSEDES _____ SCALE _____ SH. ____ OF ____ SHEETS
A-80403

PLATE L-1

system, trees are a very distinct and serious problem in the construction and maintenance of overhead lines. In the beginning, it was common practice to consider trees only as an obstruction to be dealt with in any manner. Little thought was given at the time to the value of the tree, or to the annual maintenance cost of keeping trees from interfering with overhead lines. In the early 1930's the management of the Alabama Power Company decided to initiate into its tree trimming program the "Drop-Crotch" method of line clearing. For the past 25 years it has proven very successful from the standpoint of cost and a greatly increased trimming cycle, in addition to the fact that it has greatly improved our customer and public relations.


CUT SMALL SLENDER TREES WITHIN 15' OF 'E' OF R/W
CUT LARGE TREES WHOSE LIMBS COME WITHIN 75' OF E OF R/W.
CUT UNDERBRUSH WITHIN 15' OF 'E' OF R/W
RIGHT OF WAY CLEARING ALONG PRIVATE RIGHT OF WAY
CUT SMALL SLENDER TREES WITHIN 15' OF 'E' OF R/W.
CUT LARGE TREES WHOSE LIMBS COME WITHIN 75' OF 'E' OF R/W
CUT UNDERBRUSH WITHIN 15' OF 'E' OF R/W
RIGHT OF WAY ALONG HIGHWAY - UNINHABITED SECTIONS
CROWN MUST NOT BE LIMITED MORE THAN 50
CROWN MUST NOT BE RAISED ABOVE THIS
FULL HEIGHT SPECIFIED
SATISFACTORY
PREFERRED
OBJECTIONABLE
POLE LOCATION WITH REGARD TO TREE TRIMMING
ALABAMA POWER COMPANY
DISTRIBUTION STANDARDS
TREE CLEARANCE - RIGHT OF WAY
TRIMMING AND CUTTING
A-80404
PLATE L-2

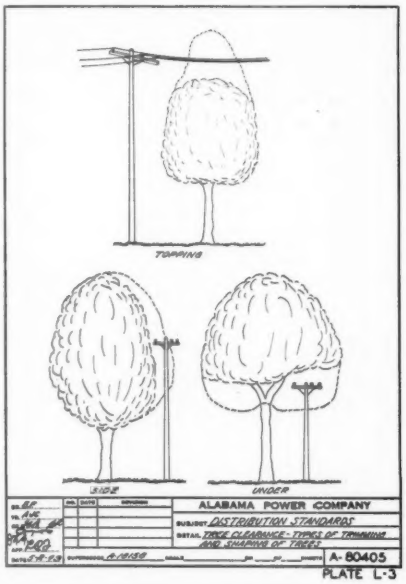


PLATE L-3

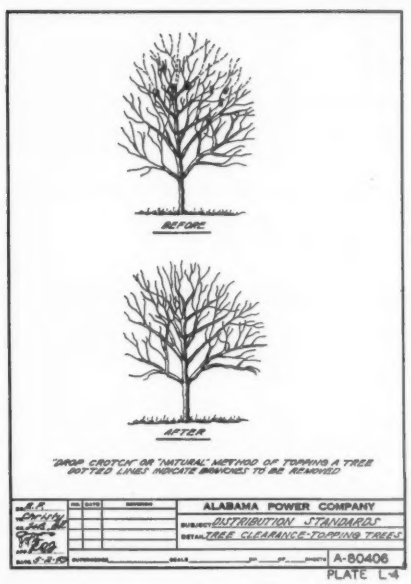
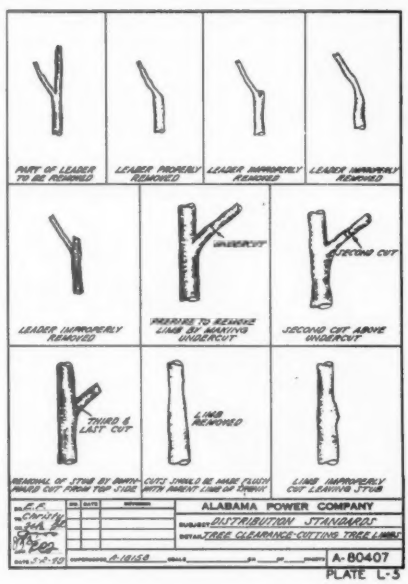


PLATE L-4


PART OF LEADER TO BE REMOVED
LEADER PROPERLY REMOVED
LEADER IMPROPERLY REMOVED
LEADER IMPROPERLY REMOVED
LEADER IMPROPERLY REMOVED
UNDERCUT
PREPARE TO REMOVE LIMB BY MAKING UNDERCUT
SECOND CUT
SECOND CUT ABOVE UNDERCUT
THIRD & LAST CUT
LIMB REMOVED
REMOVAL OF STUB BY MAKING THIRD CUT FROM TOP SIDE
CUT SHOULD BE MADE FLUSH WITH PARENT LIMB OR TRUNK
LIMB IMPROPERLY CUT LEAVING STUB
ALABAMA POWER COMPANY
DISTRIBUTION STANDARDS
TREE CLEARANCE-CUTTING TREE LIMBS
A-80407
PLATE L-5

In modifying tree forms to accommodate overhead lines within our system, all of the accepted principles of tree surgery are followed insofar as is possible. While the primary purpose may be to obtain line clearance, such fundamental details as making flush cuts, painting wounds and cutting back to laterals are adhered to.

There are three main classes or types of tree trimming in line clearing work. These are: side trimming, under trimming and topping. Regardless of the type of trimming we are doing, the original or natural form of each individual tree is maintained as far as possible.

Side trimming presents us with two problems — under-clearance and overhang, and for this reason we try to locate lines so as to minimize necessity for heavy side trimming. Another reason for locating lines as far from the trees as possible is because the opening needed in a vertical direction to provide the necessary clearance mars the appearance of most trees. In some cases where bad notches are unavoidable, the apparent size of the opening is reduced by heading back the outer ends of the branches, both above and below the wires, some times to the extent of the entire side and the rounding over of the top of the tree. Trees having dense branching habits are thinned out to avoid a stubby appearance and to allow space for the developing of lateral branches.

Under trimming tends to change the natural tree form but very little in that it consists merely of the raising up of the crown by removing all the lateral branches below the wires. However, it is adaptable only where the greater part of the crown is above the wires to begin with. It is necessary in many cases to remove the branches on all sides of the tree to a corresponding height from the ground in order to present a balanced appearance. Clearance from overhanging branches is the prime consideration here.For a general rule, we say that a minimum of five feet of clearance from the nearest branch is needed but any more clearance that can be obtained is desirable. In addition, all dead or dying branches and broken branches that might fall into the line, as well as long slender or structurally weak branches that could come into contact with the wires by being weighted down with rain, snow or sleet, are removed. Most every kind of tree is adaptable to this type of trimming provided that it is tall enough. Vase, or umbrella shaped trees, such as the American elms, are particularly so.

Topping or rounding over of a tree is done in a presentable manner and every effort is made to avoid "U" or "V" shaped notches in the upper crown. Most topped trees stand directly underneath the line, but on some occasions such as high side trimming or when there are extremely tall trees with a brittle wood texture near the lines, a complete topping job is done. There are two methods of rounding over a tree. The first consists of cutting each individual branch back to a uniform height, better known as shearing a tree. The second, which we believe is the most efficient method, commonly termed "drop-crotch" pruning requires a major portion of the branches be removed below the intended finish height of the crown. This is necessary in order to make a cut back to the parent branch. The remaining upright branches of the crown are evened up by making each cut back to a lateral branch

(Continued on page 24)

The Origin and History of the Cultivated Plane-trees

(Continued from Vol. 17-No.5 TREES Magazine)

By Hui-Lin Li

Taxonomist
The Morris Arboretum of the University of Pennsylvania

Origin of the London Plane

The London Plane apparently first appeared in cultivation in the 17th century. Various opinions were expressed regarding its origin and there were attempts to trace it to some Asiatic sources. While it was first generally regarded as a variety of the Oriental Plane, from the very beginning suggestions of its hybrid nature, appeared from time to time in the literature.

Henry made a thorough study of this problem (1908). At first he rejected the hybrid origin of *P.* × *acerifolia*, but his subsequent investigations (1919) led him to believe firmly in the hybrid origin of the London Plane. Such is the view now generally accepted. Henry is of the opinion that the remarkable vigor of the London Plane, its power of resistance to drought, smoke and other unfavorable conditions of soil and atmosphere, is due to its hybrid origin.

Henry believes that the London Plane must have originated as a chance seedling in some botanic garden, where an American Plane and an Oriental Plane happened to grow close together. His historical research led him to surmise it was possibly originated in the Oxford Botanic Garden at about 1670.

Henry's surmise was based on the following: The American Plane was introduced from America to England by Tradescant in 1636, while the Oriental Plane arrived about a century earlier. By 1670, the American species would be old enough to bear pollen. There is a manuscript left by Jacob Bobart, Jr., curator of the Botanic Garden at Oxford in 1680, which is without date, although a similar one bears the date 1666. In the enumeration of Planes in cultivation, besides *P. orientalis* and *P.* occidentalis, a plant is listed as "P. inter orientalem et occidentalem media", and corresponding to this diagnosis of a "Plane intermediate between the Oriental and American species", there is a herbarium specimen, undoubtedly *P.* × *acerifolia*, in the Sherard Herbarium at Oxford, labeled "Platanus media". Specimens labeled "Platanus media, n.d. Bobart, Ox." are in the British Museum, made at about the same period, together with the type specimen of the first published description of the London Plane by Plukenet in 1700.

Thus, it is the opinion of Henry that the original tree which Plukenet describes as bearing large fruit balls in 1700, was then living in the Oxford Botanic Garden, and as it may have been then thirty years old, this would give the date of origin of *P.* × *acerifolia* as 1670.

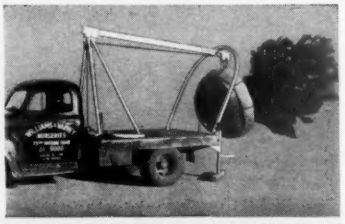
Henry's surmise, which as he says is something which cannot be definitely proved, may not be far from the truth. It gives, however, only the earliest historic records of the tree, and does not necessarily mean that subsequent trees of the London Plane are all derived from this single individual, as implied by Henry.

Henry, moreover, points out earlier (1908) that the *P. occidentalis* of Evelyn's Sylva, ed Hunter 1683, is undoubtedly *P.* × *acerifolia*. This shows that there might possibly be more than a single source of origin even at this early date.

A point against Henry's assertion that *P.* × *acerifolia* originated in England is the fact that *P. occidentalis* does not live long enough to flower in England and that there is no record that the tree ever flowered there in former times (Bean 1919). Although the earliest record of *P.* × *acerifolia* is from English sources, nevertheless, it is quite possible that actually it might have originated concurrently or exclusively on the European continent where both *P. occidentalis* and *P. orientalis* are hardy.

The first record of the London Plane on the continent was made by Tournefort in 1703 as "P. orientalis aceris

(Continued on page 17)



Williams & Harvey Nurseries

BIG TREE MOVER

- New Light Weight
- Simpler to Operate
- Two Sizes, 6′ and 7′
- Quickly Demountable
- Fits Any Standard Truck

Write for specifications and address of users near you. Six-feet mover as pictured: complete with power winch and all needed pick-up parts: F.O.B. Kansas City, Mo. **$1,675.00**

WILLIAMS & HARVEY NURSERIES
P. O. Box 8822 Kansas City, Mo.

FOR SAFETY
spray with Pratt's

Pratt's Sprays are formulated for use in mist blowers or hydraulic sprayers to give the greatest degree of safety and effectiveness for shade trees and evergreens.

PRATT'S 25% DDT (petroleum solvent) has created an enviable reputation for safety to the trees, even under conditions of heavy application. Correctly balanced for long residual toxicity. This material will stand freezing weather.

PRATT'S X 25% DDT (xylene solvent) is manufactured to meet certain City or State specifications for Dutch elm disease spraying. Made according to U. S. D. A. formulations, with or without white oil.

SCALECIDE—The oldest and best known dormant oil spray. Contains 96% highly refined, highly paraffinic dewaxed oil. Use Scalecide for the control of scale, aphis, red mite, and over-wintering insects on shade trees, fruit trees, evergreens and ornamentals.

PRATT'S SUMMER SPRA-OIL—A miscible 97% white oil type summer oil. For use in the control of red spider, scale crawlers, white fly and as an effective ovicide, also used as a dormant spray for evergreens where a lighter oil is desired.

D-X INSECT SPRAY—One of the most effective non-poisonous sprays for sucking and chewing insects of shade trees as well fasruit trees. Contains rotenone, pyrethrum and piperonyl cyclonene for great effectiveness and safety.

Pratt is basic in Chlordane, Malathion, Lindane, etc.

B. G. PRATT COMPANY 204 21st AVENUE PATERSON, N. J.

Patronize the Advertisers and mention TREES

Lightweight, rugged, powerful PIONEER

the chain saw designed specifically to make your day's work more profitable and pleasant. It is engineered for the roughest cutting conditions in the big woods—it's built to cost less because it lasts longer. Pioneer is backed by Outboard Marine Corporation—makers of Johnson and Evinrude outboard motors and Lawn-Boy power mowers.

PIONEER ENGINE

Single Cylinder Construction—air-cooled big bore cylinder with micro-honed walls. High turbulence combustion chamber.

Single Throw Crankshaft—case hardened alloy steel, precision-ground and balanced.

Double-Shielded Main Bearings—high quality ball type.

Low Expansion Piston—of special aluminum alloy. Full floating wrist pin.

New-design Narrow Rings that lessen friction wear and offer better sealing.

Drop-forged Connecting Rod. Needle bearings. Patented bolting feature on bottom end.

PLUS PIONEER-PROVED DIRECT DRIVE

The direct transmission of all the engine's power to the chain sprocket —gives the Pioneer operator big advantages:

His saw cuts much faster and smoother—feeds itself into the wood with no need to bear down. Rapid chain speed with the instant protection of the automatic clutch results in less engine wear and vibration. And there are *no* gears to strip or lubricate!

But there's much more to a Pioneer!

from every angle—a rugged **PIONEER**

gives you more cutting power for every job!

costs less to own because it works hard, lasts longer!

is designed for fast, low-cost servicing!

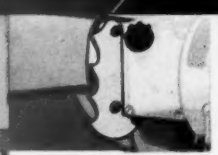
here are 25 reasons why this is true (as illustrated in the Model RA Pioneer—a light-weight one-man saw for rugged cutting)

EASY-TO-USE OIL PUMPER

is mounted at the side of the handle in easy thumb reach. You can't forget to oil the chain.

BIG FUEL TANK WITH A BIG HANDY CAP

Nothing skimpy about this rugged one-piece gas tank. Safety gas cap has one-way valve to stop leaks—can't be lost.



STURDY LOG-GRIPPER

provides a firm grip in the tree for faster, safer cutting. Helps saw glide effortlessly through cut.

AMPLE COOLING SYSTEM

Self-cleaning rotary screen fan directs ample flow of clean air, prevents over-heating during production cutting.

EASY-N-SURE STARTER

dependable non-jamming recoil starter. In coldest weather fast starting. Few parts—simplified design.

GRIT-STOPPER AIR CLEANER

lets only pure, clean air reach the engine. Fine metal mesh construction for long life and easy cleaning.

RUGGED PIONEER POWERHEAD

Aluminum alloy block with special alloy sleeve. Micro-honed walls for high torque power. Air-flow fins for fast cooling and easy cleaning.

THE POWERFUL HEART OF A PIONEER

—special diaphragm carburetor with adjustable speed and idling jets. A trouble-free carburetor that runs the saw at full power at any angle—even upside down.

CHAIN TENSIONING DEVICE

Positive, adjustable screw tightener to hold chain at correct tension for smooth, fast travel. Easy-to-reach, yet well protected.

SNAG-PROOF FUEL LINE

The shortest, sturdiest fuel hose Pioneer engineers could use. Removable without special tools.

SAFETY COVER GUIDE

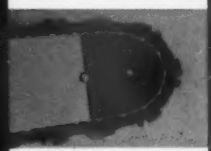
covers drive sprocket—protects operator. Shaped to throw chips and twigs down and out. Strong, metal part.

REMOVABLE SHROUD

Quick-snap catch and one piece shroud comes off. Field strip in seconds. Protected spark for all-weather operation.

SEDIMENT BOWL

can be removed, cleaned and replaced in less than a minute! Traps every particle that might clog fuel system (and cause lost cutting time).



HARD-TIP BAR

Pioneer bars are induction hardened and have a Stellite hard tip for extra ruggedness at point of most friction. Precision-milled slot. 16", 20", 24", 28", 32" bars available.

SPARK-STOP EXHAUST

that keeps smoke out of your eyes and will never burn you or start a forest fire. Mounted up front—away from harm.

SUPERIOR CHAIN OILER

with hydraulic pump that puts oil where and when it's needed. Easy to fill and use, it prevents unnecessary chain and rail wear.

A NEW STABILIZED PIONEER CHAIN FOR EVERY TYPE OF CUTTING

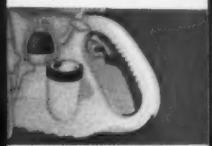
The new improved high speed Pioneer chain is stabilized to cut faster, last longer. It features vibration-free performance, accuracy, greater productive capacity. Downtime and chain replacements are sharply reduced. Pioneer chains also mean less operational fatigue. There's a Pioneer saw chain for every cutting job. Let the Pioneer Dealer in your territory help you select the right chain for your saw. Also, ask him to demonstrate the proper methods of good chain saw sharpening.

AUTOMATIC SAFETY CLUTCH

that releases instantly when chain gets caught, thus protecting engine against shock. Rugged parts to do most important job.

ON-OFF SWITCH

is mounted close by for increased safety.



COMFORTABLE CONTROL-CENTER HANDLE

No fuming with a Pioneer! You have complete control of the saw and chain at all times. Trigger throttle guns engine and regulates chain speed.

WRAP-AROUND HANDLE

Chrome-plated for smoothness. Welded mounting brackets. Pioneer has a constant center of gravity in any position for easy all-day cutting.

THREE-BOLT BAR MOUNTING

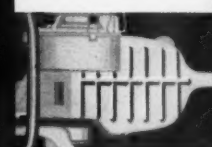
Strength and convenience where it counts. Heat-treated studs and nuts—standard size with no special tools needed for field service.

SEALED MAGNETO

Complete weather-proofing of magneto assures dependable performance at all times. Special seal keeps out dust and moisture.

DIRECT-DRIVE CHAIN SPROCKET

is case hardened to resist wear. New design includes it with automatic safety clutch.



STRONG SUPPORTS

at base of engine and handle protect saw against damage during low cutting. There's sturdy ruggedness built into every Pioneer.

4 practical points on buying any chain saw . . .

1. Buy the saw that features ruggedness and compact design—not mere "lightweight." A Pioneer is woods-engineered for the roughest possible conditions, therefore weighs a few pounds more. There is no sacrifice of durability and quality where it has proved vital to the saw's long life and freedom from repairs and work-stopping downtime.

2. Compare by cutting. Try all the saws designed for your type of operation. Don't overbuy. We think you will find that a Pioneer stands out above the crowd. Better performance. Much easier to start and keep running. Fast chain speed and smooth cutting. Easily adapted to take on any sawing job.

3. Learn the many advantages of direct drive cutting. In a Pioneer there's no gear train to waste cutting power. Increased chain speed means more efficient, smoother cutting. With a Pioneer and direct drive there's less drag on the engine, fewer maintenance worries.

4. Check on service. Any saw is just as good as the quality and availability of experienced servicemen and repair parts. Pioneer dealers have a reputation for skillful, low-cost work. And you start with the built-in bonus of a Pioneer's rugged design and longer-life parts.

GET ALL THE FACTS FROM YOUR PIONEER DEALER NOW!

(write for name of nearest dealer in your area)

PIONEER

SAWS

WAUKEGAN, ILLINOIS

a division of OUTBOARD MARINE Corporation—makers of *Johnson* and *Evinrude* outboard motors and **LAWN-BOY** power mowers

Plane Trees

(Continued from page 12)

folio". Since then the cultivation of this tree has spread all over the continent.

An early opinion on the origin of this plant was expressed by Miller (1731) who says of *P.* × *acerifolia,* "Although by some supposed to be a distinct species from either *P. orientalis* or *P. occidentalis,* it is no more than a seminal variety of the first; for I have had many plants that come up from seeds of the first sort which ripened in the Physick Garden (Chelsa), which do most of them degenerate to this third sort; which, in the manner of its leaves, seems to be different from either, and might reasonably be supposed a distinct kind by those who have not traced its original".

The current scientific name of the plant is adopted from the one given by Aiton in 1789, who considers it as a variety of the Oriental Plane as *P. orientalis acerifolia* (in Hort. Kew. 3: 304. 1789). Willdenow is the first to accord it specific status as *P. acerifolia* (Ait.) Willdenow (in Linn. Sp. Pl. ed. 4, 1: 474. 1805), but in spite of this, most authors, up to the beginning of the current century, treated it as a variety of *P. orientalis.*

The London Plane is a tall tree with an upright stem, attaining to a size intermediate between the taller *P. occidentalis* and the slightly lower *P. orientalis.* The bark usually exfoliates in large flakes as in *P. orientalis* and the inner bark is variable in color. The leaves are large, with fine broad triangular lobes resembling more closely those of *P. occidentalis* but in general the middle lobe is slightly narrower. The lobe is about as long as broad while in *P. occidentalis,* the middle lobe is broader than long. The fruiting heads are extremely variable in size and number on the peduncle; mostly in twos, but varying to as many as six. The individual achenes are similar in structure to those of *P. orientalis* and do not resemble those of *P. occidentalis.*

It can thus be seen that *P.* × *acerifolia* resembles *P. occidentalis* more closely in foliage characters and *P. orientalis* in fruiting structures. Because of the close similarity of the leaves between *P. occidentalis* and *P. orientalis,* the two were much confused with each other in the literature of the 18th and 19th centuries. Inasmuch as *P. occidentalis* is quite unsuitable to the climate in England and Europe, it must have been very rare in these countries in former times to as *P. occidentalis* were actually in- (as at the present) and plants referred variably *P.* × *acerifolia.* Not until 1856 did Hooker (1856) clarify the confusion by distinguishing the two on the basis of fruiting characters, which had hitherto been unnoticed.

The hybrid nature of the plant, although not definitely recognized at first, was long suspected by many authors. A horticultural name, *P. intermedia* Hort., of unknown origin but expressing the apparent hybrid nature of the plant, long appeared in the synonym of *P.* × *acerifolia.* It is listed under *P. orientalis* var. *acerifolia* Ait. by Loudon in 1844,[4] and might have been in existence much earlier.

That the hybridization did not occur in one instance only is indicated by the independent recognition of this phenomenon in several other countries. Before 1731, there was known in England a plant called the Spanish Plane-tree which is essentially similar to *P.* × *acerifolia* but with wider leaves having more cordate bases. The tree, described in Millers Dictionary, ed. 7, published in 1759, is based on one he planted in 1731 as a variety accidently arisen from seed. His description is unmistakenably that of the Spanish Plane later known as *P. hispanica.* This rare tree, which originated some time before 1731, was, in the opinion of Henry, probably a seedling of one of the early London Planes. The same tree was imported to England from France in 1856 under the name *P. macrophylla* (Rivers 1860).

In 1804, Brotero, Fl. Lusitan, 2: 487. 1804, describes *P. hybridus* from plants cultivated in Portugal. Although this is generally but doubtfully referred to the synonymy of *P. occidentalis,* there is a strong indication that it should be considered as a synonym of *P.* × *acerifolia,* which has actually a year's priority over the latter name.

These various records seem to indicate that hybrids between *P. occidentalis* and *P. orientalis* appear to have arisen independently in several different countries at different times. It may be argued that the Portuguese and Spanish plants were introduced from England, but inasmuch as they are quite distinct from the English types, this seems rather unlikely. On the contrary, the Spanish plant, which was called Spanish Plane in England as early as 1759 or earlier, must have come from Spain rather than the reverse. Furthermore, *P. occidentalis* is known to be tender in England, seldom reaching the adult fruiting stage there, but is more at home in southern Europe. In the latter area hybrids between it and *P. orientalis,* which is also more commonly planted there than in England, are more likely to occur than in any region further north.

The Spanish Plane, also known as *P. macrophylla* as illustrated and described by Bean (1919) from trees grown in England, shows more distinctly the influence of *P. occidentalis* in its fruiting characters than other plants of *P.* × *acerifolia.* The fruiting heads, occasionally 2 or 3 together, are frequently solitary, with the individual achenes almost smooth and more flattened at the apex than those of *P. orientalis.*

Variations of the London Plane

From the records, it seems therefore justifiable to conclude that *P.* × *acerifolia* or the London Plane is an assorted group of trees of variable characters which have originated as hybrids between *P. orientalis* and *P. occidentalis* independently in different countries in eastern Europe and the British Isles at various times. Since the two species hybridize, it is very unlikely that hybridization happened only once and not other localities, especially where more individual trees of both species are present. The two parent species concerned are very variable in their characters. This explains the occurrence of the many different types of hybrid progenies derived from these two species. These progenies, whether propagated vegetatively or as seedlings, maintain or further increase, the variation of the complex known collectively as *P.* × *acerifolia.*

Among the cultivated specimens of *P. orientalis* in Europe, there are usually recognized two varieties, *cuneata* and *digitata.* Although their leaves resemble more closely *P. orientalis,* Henry is apparently right, in view of their frequently imperfect achenes, in considering them as of hybrid origin. Henry believes them to be second generation seedlings of *P.* × *acerifolia.* Although we have no way of ascertaining their origins, they are possibly cultivated clones of advanced generation segregates of the hybrid *P.* × *acerifolia* that resemble most closely *P. orientalis* in leaf shape.

Henry (1919) recognizes *P.* × *acerifolia* as the first generation hybrid of *P. orientalis* and *P. occidentalis* and accepts six additional "species" as second generation hybrids, including *cuneata* and *digitata,* mentioned above, and two new species of his own as follows:

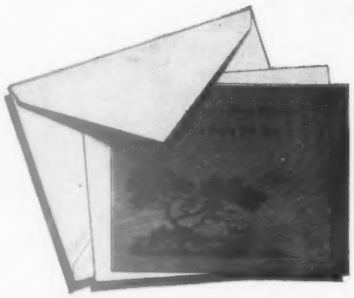
P. hispanica Muenchhausen
P. pyramidalis Rivers
P. cuneata Willdenow
P. digitata Gordon
P. cantabrigiensis Henry
P. parviloba Henry

According to modern taxonomic concepts and nomenclatural practices, since *P.* × *acerifolia* is considered as a hybrid between *P. orientalis* and *P. occi-*

(Continued on next page)

[4] This antedates Rehder's assertion (Rehder 1949) that the name, in synonymy, is to be credited to the Kew Handlist of Trees and Shrubs of 1896. Still less understandable is the listing of this name by Index Kewensis Suppl. 9, 1938. attributing this name, also in synonymy, to Chow, Familiar Trees of Hopei, 1934. This latter work follows essentially the nomenclature as given in the first edition of Rehder's Manual of 1937.

Patronize the Advertisers and mention TREES



CARDS OF WOOD
say
"GREETINGS!"
—in a more Charming way—

Each card is made of a piece of wafer-thin PINE, CEDAR, HOLLY or other exquisitely grained wood. Your friends and clients will be delighted with your thoughtfulness in choosing CARDS of WOOD for CHRISTMAS GREETINGS, BUSINESS CARDS, ANNOUNCEMENTS and BOOKMARKS.

CARDS OF WOOD are sold direct . . . Write

CARDS of WOOD
Manlius 8, N. Y. for information

SPECIAL OFFER: Send only $1 for 5 assorted beautiful cards with paper card, envelopes and illustrated folder. You'll want to re-order before Christmas! Book marks $1.00 for 3 all different.

All Models Of
FANNO SAWS

Disston, Atkins and Seymour Smith pruning saws and shears. Safety equipment for tree work.

COMPLETE LINE OF TREE SURGERY SUPPLIES. WRITE FOR CATALOGUE.

Fruit Growers of Chester County, Inc.
WEST CHESTER, PA.

SHARPEN YOUR SAW CHAINS

ACCURATELY
QUICKLY
AND
EASILY

WITH THE
FORESTER PRECISION
SAW CHAIN SHARPENER

- Chains Cut Better Than New
- Saves In Replacement Cost
- Saves In Sharpening Cost
- Saves In Labor Cost

Sharpens every cutter to a razor sharp, mirror finish with exactly the same horizontal and vertical angles. Chains last 3 to 5 times longer because precision sharpening removes less metal. Diamond hard carbide burrs will outlast files 15 to 1 and can be resharpened several times so that they are as good as new.

WRITE FOR INFORMATION AND PRICES

FORESTER MANUFACTURING COMPANY
10 McCue Avenue, Lockport, N. Y.

Plane Trees

(Continued from page 17)

dentalis, it should be designated either by the formula *P. orientalis* × *occidentalis* or by the name *P.* × *acerifolia.* Only one specific epithet is admissible in this case, and such other specific names as given by Henry, if considered as of hybrid origin between the two same parental species, should all be included in this concept. Variations with *P.* × *acerifolia* should be recognized as cultivars (cv.) and rendered in Roman in quotes instead of using italicized Latin names. Such cultivars as are propagated solely by vegetative means from a single known stock are known as clones (cl.). The recognized variations of *P.* × *acerifolia* (Henry & Flood 1919, Rehder 1940) are described and discussed below.

(1) *P.* × *acerifolia* cv. 'hispanica'

Leaves large, often 30 cm. in width, persistently tomentose on the nerves and petioles, shallowly cordate or cuneate at base, with 5 distinct short, broadly triangular lobes, the margins dentate. Heads not so flattened as in *P. occidentalis* and not so conical as in *P. orientalis.*

This taxon appeared formerly also under the names, *P.* × *acerifolia* var. *P. hispanica,* or *P. macrophylla.* It is cultivated in England and France, but is apparently unknown in America. It is a vigorous tree, which, according to Henry, produces good seeds from which seedlings, which are not uniform, can be easily raised; however, in nurseries it is invariably propagated by cuttings.

(2) *P.* × *acerifolia* cv. 'cuneata'

Small tree. Leaves deeply 5-lobed, very cuneate at base, conspicuously dentate at the margins, practically glabrous when adult. Fruiting heads 2-4, small, rarely over 2 cm. in diameter, composed of few, often imperfect achenes.

This is a variety long placed in *P. orientalis,* as young trees of cultivated *P. orientalis* and even certain adult wild forms often bear cuneate leaves and are scarcely distinguishable. But Henry points out that this variation is distinguished by its fruiting heads, which are small and often made up of few mostly imperfect achenes and for this reason he believes it to be probably of hybrid origin. It conceivably originated sometime before 1789, when it was first made known by Aiton.

(3) *P.* × *acerifolia* cl. 'digitata'

Leaves resembling *P. orientalis* but much smaller, to 13 cm. broad, the base truncate but with a short central cuneate part, the lobes 5, elongated, dentate, with wide sinuses. Fruiting heads, 2-3, very small, about 1.2 cm. in diameter, composed of a few imperfect achenes.

To Be Concluded In The Next Issue

You Saw the Ad in TREES

Natures Soil Conditioner

...NATURAL!

...LASTING!

...EFFECTIVE!

Use Green Thumb Peat

When incorporated in the soil-mix for newly planted trees and shrubs it creates an unbeatable rooting medium

GREEN THUMB AERATES—HOLDS MOISTURE—AIDS ROOTING

1. 97% pure, organic sedge reed, bacterially high content.
2. One cubic foot makes upward to 50 cu. ft. of good soil, or 15 cubic feet of rich organic soil.
3. Excellent natural nitrogen—readiness to use—going to work at once.
4. Delightful flowing into the soil in handling—uniform structure creates maximum economy.
5. Normal moisture holding, with gradual delivery only to soil and plants assure the maximum in plant development.
6. A product processed, based on 30 years proven continuous operation, has a ph of 4.5 to 5.5, that is quickly, easily and economically adjusted to needs of any plant material.
7. The most efficient and economical soil building nature product in existence.

"Green-Up America With Green Thumb Peat"

PRICES ON TRUCK OR CAR LOADS ON REQUEST

GREEN THUMB PEAT-HUMUS CO.

CAPAC, MICHIGAN

Asiatic Maples

(Continued from page 9)

results obtained with softwood cuttings taken from forced young seedlings, these small rooted cuttings will grow anywhere from four to fifteen inches the same season in which they are rooted. Of course, it is not commercially feasible to force young seedlings into growth during the early spring months in order to make softwood cuttings from this forced growth. However, it is certainly feasible to make softwood cuttings from these same seedlings out-of-doors during the months of May and June and obtain similar rooting results. The only differences will be in the amount of vegetative growth which these rooted cuttings will make during the summer. Although they will grow, the growth will not be so great as when the cuttings are rooted during the months of March and April in the greenhouse.

We have not yet been able to root *successfully* all of the Asiatic Maples which we have tried, due to a variety of reasons. First and foremost is the inability to obtain young stock plants. The stock plants which we have worked with in these instances are relatively old (fifteen to thirty-five years); consequently, cutting material collected from these plants root very poorly, if at all. In addition to this, in some experiments the quantity of cutting material employed has been too small to give us significant results. Last of all is the fact that the timing in the collection of these cuttings was not correct. Many times the cuttings were made from half-ripened or fully ripened wood during the months of July, August and September and for this reason they did not root.

Table III lists the Asiatic Maples tried only on a limited scale and the results obtained.

Summary

If a supply of seed is lacking, the propagation of Asiatic Maples from softwood cuttings is quite feasible. The procedure mentioned herein is certainly more expensive and time-consuming than growing these same plants from seed. However, the expense is offset, in part at least, by the fact that one does not have to wait until every second, third or fourth year in order to obtain a good supply of seed; and secondly by the fact that *taken early enough in the season,* a softwood cutting will, in most cases, outgrow a seedling during the first growing season.

The advantage of making softwood cuttings from young plants is easily seen when the rooting results of Table II are compared with those of Table I. While in every case the softwood cuttings taken from the younger stock plants rooted better, there were two cases where the cuttings taken from older stock plants rooted fairly well. I refer to the results obtained with *Acer cissifolium* and *Acer capillipes*. It also should not be overlooked here that, in both of these cases, the cuttings were wounded. Just what effect wounding would have had upon the rooting results obtained with other maples attempted is highly speculative. However, there is no doubt that in the two instances where it was employed, rooting was stimulated.

In all of these experiments the use of manufactured rooting hormones was varied and extensive, but in most instances, the best rooting results were obtained with the commercial preparation Hormodin #3 (0.8 per cent indolebutyric acid in talc).

The preceding pages describe one technique by which Asiatic Maples may be propagated. This method will not replace or supersede the propagation of these plants by seed, but it can and should be used to reproduce them on a more regular schedule. The last and probably most important factor in favor of propagating these plants from softwood cuttings is the fact that for many of them *there is no commercial supply of seed available anywhere.*

NOW...

with
NEW IMPROVED
WILT-PRUF

When sprayed on foliage, WILT-PRUF retards evaporation. Newly transplanted trees and shrubs protected with WILT-PRUF do not suffer damaging moisture loss while becoming adjusted to new locations!

This moisture retention enables nurserymen and propagators to carry on planting operations safely even through summer . . . thereby adding a new profitable season to their business calendars!

Virtually all sizes and varieties of plant material . . . from 40-ft. Pin Oaks to small vegetable seedlings . . . have been moved successfully even in hottest weather when coated with WILT-PRUF!

You owe it to yourself to discover how WILT-PRUF helps boost your profits by ending slack periods, reducing plant loss and cutting replacement expenses!

WILT-PRUF PROTECTS VALUABLE PLANT MATERIAL IN MANY OTHER WAYS. GET ALL THE DETAILS—NOW! FROM YOUR NEAREST WILT-PRUF DISTRIBUTOR OR WRITE TO:

Nursery Specialty Products, Inc.
Stebbins Road, Croton Falls, New York

Beginning of Easier Cutting

THE NEW, ALL NEW

HOMELITE

6 22

You can cut more wood in less time with the new Homelite 6-22 chain saw in any kind of hard or softwood production cutting.

From notching to final bucking, its 6 full horsepower and 22 balanced pounds make quick work of every cut. It has the lugging power to fell trees up to 7 feet in diameter and cut through 20″ trees in 18 seconds. Big new fuel tank lets you cut longer without refueling. A real professional's saw, the Homelite 6-22 stands up under the grind day in and day out for dependable, low-cost operation.

Famous Homelite engine features give you more for your money, too . . . new, revolutionary intake valve increases engine power, prolongs life. New chrome-plated cylinder in the short-stroke, high-compression engine cuts friction, decreases gas consumption.

Your choice of straight blades from 14″ to 60″ or 14″ and 18″ plunge-cut bow. Get a free demonstration from your Homelite dealer.

HOMELITE
A DIVISION OF TEXTRON INC.
810 RIVERDALE AVE., PORT CHESTER, NEW YORK
In Canada: Terry Machinery, Ltd.

Homelite builds and sells more chain saws than any other company in the world.

See all the famous Homelite Line!

6-22 most versatile all-purpose gear drive chain saw available. Has straight blades, plunge-cut bow, brush-cutting and clearing attachments. 6 horsepower, 22 pounds. Gives you everything you want for dependable, year-round performance.

EZ-6 lightest, most powerful direct drive chain saw made. 6 horsepower, 19 pounds. Easy to carry, easy to handle. Cuts trees up to 5 feet in diameter, zips through 8″ oak in 4 seconds, 18″ pine in 14 seconds.

4-20 rugged, gear-drive chain saw gives you consistent, dependable performance in a wide range of cutting jobs. 4 horsepower, 20 pounds, cuts trees up to 4 feet in diameter.

7-29 most powerful one-man chain saw you can own. 7 horsepower, 29 pounds. Powerful enough to bring down any tree in a stand. Fells trees up to 10 feet in diameter.

Handy Back Saver

A 1000 lb. capacity lift gate that mounts on any make or model of ½, ¾, and 1-ton truck without cutting or alterations to the truck body is being offered by Curtis Automotive Devices Inc., of Bedford, Indiana.

Known as the Master Loader it is offered in two models: Model P-1000 for express body trucks has a 54" x 28" platform and weighs only 325 lbs. Model S-1000 for stake body trucks has a 78" x 28" platform and weighs 450 lbs.

The Master Loader differs from other lift gates in that the platform is raised by torque type lifting arms that lift the load straight up—no wide arc in the ascent or descent to inconvencience the operator. Power to the gear driven arms is supplied by a hydraulic pump and cylinder combination. The pump is driven by an electric motor that operates on the trucks 6 or 12 volt system. A relief valve built into the pump protects the life gate against dangerous overloads.

Remote controls mount on the side of the truck, housing finger tip control button for elevating load and needle valve for controlled speed descent. Load may be stopped in any position of ascent or descent at any time.

The unique design of the Master Loader permits it to be mounted any where it can be supported by only two U bolts—rear or side of truck. Trucks that load and unload from the side—milk, parcel, beverage, laundry, bakery, and etc.—can be equipped with a Master Loader. The lowest cost, safest, and easiest mounting 1000 lb. lift gate on the market.

For literature and additional information write Collins and Associates, Box 22, Cincinnati 38, Ohio — National Representatives.

Red and Black Insect

The Boxelder Bug, may be seen clustered around boxelder trees during sumer. The young are a more brilliant red than the adults. The adults are about half an inch long. Boxelder Bugs have piercing, sucking-type mouth parts and during the summer months they feed on the underside of leaves. As Fall rolls around, these bugs seek shelter from the coming winter. Most times, the shelter they find turns out to be the nearest house.

Boxelder Bugs do not feed on home furnishings, but their presence can become very annoying. They should be controlled and the best time to do it is before they get into the house.

Check boxelder trees, fruit trees, ash, maple and ornamentals for signs of Boxelder Bug gatherings. Spray these gatherings with dieldrin. Then, just to play it safe, treat areas around the house with a dieldrin spray. Apply the spray to door sills, window frames and any other areas of possible entry. A household formulation of .05 per cent dieldrin will do a good job of eradication.

Benton Harbor Hit by Dutch Elm Disease

Benton Harbor — A Grand Rapids tree expert has warned Benton township board officials that a Dutch elm disease epidemic threatens to wipe out the estimated 25,000 elm trees in the area.

Richard Bichler warned the township would have to spend "thousands of dollars" to remove dead elms unless trees were sprayed against the blight. Township officials said there is not money available for spraying and the board is

Taxus, age 13 weeks. Cuttings were planted in vermiculite saturated with Heller-Gro solution, were taken from propagation benches directly to field, eliminating the cost of potting. No other plant nutrition was used.

Heller-Gro is a complete plant food, made entirely of laboratory-grade U.S.P. chemicals. Dissolves completely; solution will not burn.

Heller-Gro Eliminates Potting Step in Taxus Propagation

From Propagation Benches Directly to Field in 13 Weeks

The shade tree commission of Essex county, N. J., planted 2000 cuts of mixed Ilex and mixed Taxus in vermiculite saturated with Heller-Gro solution (1 to 50). Four weeks later the beds were wet with Heller-Gro solution 1 to 100.

Mr. Leonard F. Anderson, commission secretary and executive assistant, wrote, "Seven weeks from the time of planting, we removed the plants with 100% success and found the root system so extensive we could not place them in a two-inch pot."

The cuttings were left in the beds six weeks longer. Then, thirteen weeks after planting, they were set out in the field. The entire cost of potting was saved by the use of Heller-Gro.

REPRESENTATIVES

Norco Garden Products
95 King St., E.
Toronto, Ont., Canada

Gordon H. Knowles
20 St. Albans Ave.
Newtown Square, Pa.

Write for free trial sample!

HELLER GREENHOUSE LABORATORIES

Dept. 36

218 E. Pikes Peak Ave. **Colorado Springs, Colo.**

powerless to order residents to remove diseased trees. —*Karl Dressel.*

Climbers Spot Suspicious Car

Denver—It shouldn't take long, Denver police decided to round up two men who robbed a drug store yesterday.

The pair parked their car in an alley.

Watching their flight from vantage points, police said, were a tree trimmer and a telephone lineman. Both spectators jotted down the car license and descriptions of the pair.

One man was taken into custody within a few hours.

—*Karl Dressel.*

Quack Tree Docs New Problem for Home Owners

A new breed of medical quack is invading the tree care field. Like the old-time medicine man, his stock in trade is the miracle cure-all.

This warning is sounded by Martin L. Davey, Jr., who heads the Davey Tree Expert Co. Home owners' increased tree mindedness has aroused the cupidity of self-professed tree doctors. Hire today, gone tomorrow, is their motto, for they rarely linger long in any one area.

So don't buy glittering claims or phenomenal "bargains," such as a painted band around the trunks of trees that will free them of insects and disease, enhance their vigor and promote greater beauty . . . at a cost of $25 per tree. There just isn't any such panacea. Nor is there an all-potent spray or a marvelous capsule that will protect trees from all evils.

Perhaps not quite so unethical are the men who know what to do, but go light on their materials. End result is much the same, however. The trees may, but probably won't respond to treatment.

Best protection for the home owner is some knowledge of tree care practices. If in doubt, your city forester, park superintendent, or county agent can give basic tree information.

Before hiring tree men, check on their professional status and responsibility via Better Business Bureaus, Chamber of Commerce, or City Hall.

Then check if they have *industrial insurance* or *property damage insurance* coverage. If not, *an accident on the home grounds may involve you in personal injury claims,* or expensive repair bills, or both.

ARBORIST—Male—White—Age 25-50
College graduate in agriculture, horticulture or forestry plus five years' experience or any equivalent. Salary range $4,992-$5,980 annually. Apply Personnel Department, Room 314 City Hall, Richmond, Virginia.

Smart sprayers

rely on

PENCO® DDT Emulsion 34

Containing 3 full pounds DDT per gallon.

PENCO® Malathion E-8

Containing 8 full pounds Malathion per gallon.

These highly concentrated PENCO products contain a high number of actual pounds of insecticides per gallon, thus assuring economies in handling, transporting and storage.

Carefully selected solvents are used to keep these insecticides safely in solution and minimize the danger of foliage injury.

Stocks are located at convenient points.

A complete line of Insecticides, Fungicides, and Weed Killers is available.

PENNSALT OF WASHINGTON DIVISION
PENNSALT CHEMICALS CORPORATION
309 Graham Bldg.
Aurora, Illinois
(Formerly Pennsylvania Salt Manufacturing Co. of Washington)

Pennsalt Chemicals

Drop-Crotch Trimming

(Continued from page 11)

which is at least one-third the size of the branch being removed. This type of trimming gives the tree a more uniform and natural appearance. The shear method is more or less common practice, but we do not think it is the best practice, as it tends to make trees look artificial, stimulates sucker growth, which decreases the trimming cycle, and if practiced over a period of years, will destroy the natural form of the tree.

In addition to the three above types of trimming, we also have a small percentage of trees in our system where the lines pass through the lower crown of the tree. This type of construction is very undesirable and it creates the most hazardous type of trimming on our system because the trimmers are in a position that puts them very close to the energized wires. Every effort is being made to prevent this type of construction in our system today.

By using the above described methods we have increased our trimming cycle to over three years in the urban areas and over five years in the rural areas.

Throughout the electric utility industry the annual cost of line clearing on distribution systems amounts to 15% or more of the entire annual operation and maintenance cost of overhead lines. In the Alabama Power Company system the greatest amount that has been spent on line clearing is only 12% of the annual operation and maintenance cost.

Late in 1952, the Alabama Power Company took over the operations of the former Birmingham Electric Company. This company covered a 98 square mile area with a total of 1,335 miles of distribution lines in the most thickly populated area within the State of Alabama. This company had used the shear method of tree trimming from the beginning and there were millions of stubs from one inch to 24 inches or more in diameter. To change the trees in this system from shear trimming to "drop-crotch" trimming was quite a challenge. Every tree presented a problem which required the skill and knowledge of good tree men.

To complicate matters more, the voltage of the distribution lines in this system had to be raised and changed from "Delta to "Wye" in order to increase the capacity of the system. This higher voltage to ground, of course, required more tree clearance. We started trimming by substation areas before the conversion work was started. Fortunately, a big percentage of the lines were built in alleys where the trees were not considered too valuable. We have been successful in removing over 40% of the trees in these alleys and have obtained a trimming cycle of over three years. We have areas that were trimmed in the fall of 1953 that have not had any trimming since. These areas were exposed to winds up to 65 miles an hour last spring without any major interrup-

The cost of this type of trimming is greater on the initial trimming but it becomes more economical with each successive trimming while the cost of shear trimming becomes greater on each successive trimming because there are more cuts to be made each successive time around.

Our company maintains eleven tree trimming crews, each having from eight to ten men. These crews are equipped with specially built hydraulic dump trucks, trailer mounted brush chippers, power saws and pick-up trucks. In addition to our company crews, we also employ nine 7-man contract crews, each equipped with dump trucks, trailer mounted brush chippers, and power saws. These crews will average a tree trimmed or removed for each productive man hour. Eight of the 20 crews are being used in the former Birmingham Electric Company area where shear trimming had been practiced for a number of years, and it is expected to bring this average down to 45 minutes per tree after we complete the renovating job now in progress in the Birmingham area.

The brush chippers have proven very successful and economical to operate. We own chippers that have been in continuous service since May of 1954 that have not had any major repairs and they are still in excellent operating condition.

Power saws, as you all know, have greatly reduced the amount of labor required in tree work and they have proven themselves successful from a maintenance and economical standpoint.

The safety record of our tree trimming crews is one thing we are very proud of. In the 25 years we have operated our crews, we have had only one fatality within the tree crews and a very minimum amount of major or minor accidents. In the past five years we have had only four lost time accidents per million man hours. In fact, poison oak and poison ivy cause more accident reports to be submitted to our Safety Department than all the rest of the accidents combined.

Time does not allow me to go further into the details of our tree clearance practices but I have attached to the copies of this paper, that have been distributed, a copy of our Distribution Standards, instructions and prints that apply to tree clearance.

SECTION L

Tree Clearance

No tree, whether in the city or along country roads shall be cut or trimmed

No. 1-W Pole Trimmer has compound lever action for added cutting power. Severs limbs up to 1¼" with ease. Fully warranted. One piece pole in 6', 8', 10', 12', 14' and 16' lengths.

No. 414-M Meylan Saw with 16" curved blade saves up to 25% in time in pruning coniferous plantations. Enables man of average height to trim 9½ feet above ground. Specially shaped 36" handle.

■

Write today for new catalog on complete line of Bartlett tools and supplies.

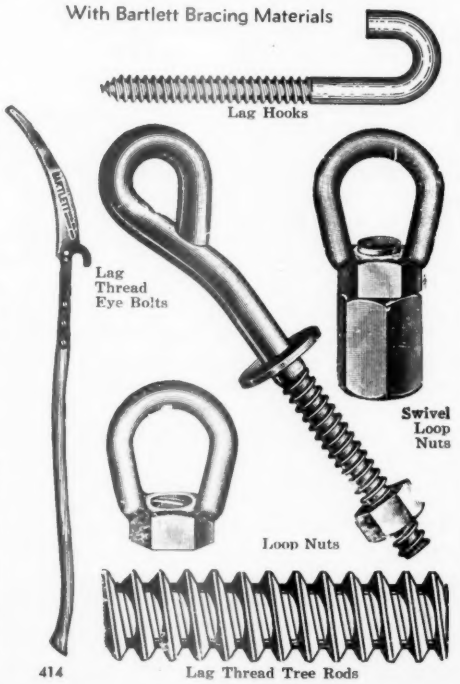
TRADE MARK REG. U.S. PAT. OFF. COMPOUND

TREE SURGERY SUPPLIES

Bartlett Mfg. Co.
3028 E. Grand Blvd
Detroit 2, Mich.

PREVENT WINTER DAMAGE PRUNE AND BRACE NOW!

With Bartlett Bracing Materials



without permission of the property owner. In addition, permission must be secured from state or county authorities to cut or trim trees within road rights-of-way. Some municipalities also require that permission be obtained from municipal authorities to cut or trim trees on dedicated streets.

All tree cutting and trimming work must be planned and executed so that appearance and physical condition of the tree or property will not be harmed. The good will of customers can be maintained through careful and expert workmanship.

Clearing:

New lines shall be laid out so that the minimum number of shade trees will have to be trimmed. When necessary to trim shade trees, locate the pole if possible, so that clearance can be obtained by side trimming or under trimming as top trimming is objectionable and more harmful.

When lines are constructed on private right-of-way or along the margin of road rights-of-way, the following general rules are to be followed:

1. Cut all large trees, except shade trees, with branches within 7½ feet of the center line of the right-of-way.

2. Cut all small trees, except shade trees, within 15 feet of the center line of the right-of-way.

3. Cut all brush, etc., located within 15 feet of the center line of the right-of-way.

4. Cut all dead trees which in falling would injure the line.

5. All trees cut down shall be cut less than one foot from the ground and no high stumps or slivers shall be left.

6. Trees cut down shall be trimmed, cut in lengths that will permit removal and piled on the edge of the right-of-way so as to obtain a neat appearance and be reasonably inconspicuous unless the owner specifies differently.

7. Care must be exercised in disposal of brush to avoid the stopping of drains and ditches.

8. When necessary to under-trim a shade tree, the crown of the tree should not be raised by more than one-third.

9. When necessary to side-trim a shade tree, not more than one-third of the length of the horizontal or lateral branches should be cut off and the pole height must be such that the wires are below the center line of the crown.

10. When necessary to trim the top of a shade tree, which cases must be limited to the minimum, the crown of the tree must not be lowered by more than one-third.

11. All logs, brush, and debris must be removed from State Highway right-of-way.

"Brush Disposal in ⅓ the time" with FITCHBURG CHIPPERS

Martin J. Kelly, President, Martin J. Kelly, Inc., Tree Expert, Cheshire, Conn. More than 28 years in the tree care business.

FITCHBURG CHIPPERS BELONGING TO MARTIN J. KELLY, INC., Cheshire, Conn., are well known along Connecticut roadways.

Painted bright yellow, and carrying a flashing red light, Kelly's three Fitchburg Chippers are in constant use with a 3 to 5 man crew doing custom line clearance work for utilities and other concerns.

Mr. Kelly has this to say about his Fitchburg Chipper fleet:

"We are operating three of your Fitchburg Chippers and find that the chipping of brush is done in one-third of the time that it would take to pile and burn the brush. It also eliminates the fire hazard of burning and the necessity of covering the burned brush.

The performance of these Chippers is very satisfactory and have given us no trouble.

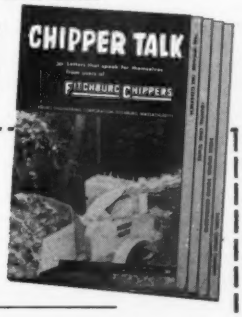
We are writing this note to give you an idea of our experience and to let you know how we appreciate your equipment."

Before you buy chipping equipment for your line clearance operation, get full specifications and compare. Remember, Fitchburg Chippers and *only Fitchburg Chippers* have the patented spring-activated feed plate that provides extra safety in operation and assures ease in chipping all wood sizes to the machine's rated capacity.

Only Fitchburg Chippers have the hinged feed apron that can be closed when the Chipper is not in operation. *Only Fitchburg Chippers* give you a written ONE YEAR GUARANTEE. So get all the facts before you buy. Mail the coupon now for your free copy of the new Fitchburg portfolio "Chipper Talk"—chock full of pictures, diagrams, and data.

Free Portfolio-"CHIPPER TALK"

Complete cutaway color drawings of Fitchburg Chipper in action. Specifications. Photo copies of letters from municipalities, commissions, counties, contractors, tree care men.



FITCHBURG ENGINEERING CORPORATION
Fitchburg, Massachusetts, Dept. TM-107
Send my free copy of "Chipper Talk" to:
Name_____ Position_____
Company_____
Address_____
City or town_____ State_____

Authors and Books

The following books may be ordered from TREES Magazine, 7621 Lewis Road, Olmsted, Falls, Ohio.

PLANT DOCTORING IS FUN, by Cynthia Westcott. D. Van Nostrand Co., 120 Alexander St., Princeton, N. J. 256 pgs., illus. $4.50.

From her books, articles, lectures and travels, Cynthia Westcott has come to be known and admired by gardeners all over the United States. Hundreds of people she has never met think of her as a personal friend and want details about her. With this delightful book, she answers the two questions most frequently asked her—"How did you happen to be a plant doctor?" and "Tell me what to do to be a plant doctor?" —in a fascinating account of a highly original and energetic life.

It takes more than just a childhood love of nature and a college major in Botany to become a full-fledged plant pathologist. Cynthia Westcott writes of graduate studies and laboratory work at Cornell, of collecting and camping trips, of living on next to nothing and enjoying life thoroughly. You'll read of her trip to Europe and of the early years of plant doctoring in Glen Ridge, New Jersey. Intimate tales of visiting and treating gardens, lecturing to women's clubs, garden clubs and church groups, arranging garden club exhibits, attending conventions, traveling in the trustworthy old Ford to beautiful homes and famous gardens throughout the country, and, of course, working and experimenting in her own back yard fill many exciting pages.

Throughout this personal story you'll find anecdotes of gardens and gardeners, hilarious descriptions of the ups and downs of travel a la Cynthia Westcott, accounts of success and failure with sprays, with houseboys, with cooking and housekeeping and many other lively details of a Plant Doctor's existence. And, as an added treat for her many friends and admirers, there are recipes for the cookies which the indefatigable Dr. Westcott bakes every year for the hundreds of visitors who come to her annual Rose Day.

* * * *

TREES AND SHRUBS FOR THE SOUTHERN COASTAL PLAIN, by Brooks E. Wigginton, University of Georgia Press, Athens, Ga. 160 pgs., illus. $2.50.

A new book designed to aid gardeners and nurserymen in the selection and planting of trees and shrubs, *Trees and Shrubs for the Southern Coastal Plain* emphasizes the importance of proper plant materials in landscape design.

Brooks E. Wigginton, author, lists and describes the best and secondary plants for the Southern Coastal Plain—this region includes the area from North Carolina through Texas. He also discusses the qualities of trees and shrubs that affect planting, such as form, foliage, ease of cultivation, flowers and fruits, and rate of growth.

Wigginton divides the plants into eight classifications based on ultimate size: vines, groundcovers, and dwarf, small, medium, and large shrubs together with small and large trees. He gives both the botanical and common names of plants.

Many practical questions are answered, such as "What shrub should be planted under a bay window on the shaded side of a house? What should be used to cover the bare ground under an oak tree? What evergreens provide screening?"

Brooks E. Wigginton is a member of the Department of Landscape Architecture at the University of Georgia. This is his second book in this field, his first being a book on the trees and shrubs suitable to the Southern Piedmont region.

Trees and Shrubs for the Southern Coastal Plain, indexed and illustrated with eight drawings and a map showing the range of temperature and rainfall in the Southern Coastal Plan, contains 160 pages and has a slick paper cover.

* * * *

TREE CARE, by John M. Haller. The Macmillan Co., N. Y. 224 pgs., illus. $5.95

Here is a book on tree care written by an American arborist, cued specifically to the home owner. Scientifically accurate and up-to-date, this practical guidebook covers every aspect of ornamental and shade tree care:—selecting, planting, feeding and fertilizing; watering, pruning, bracing; repair of bark wounds and cavities; removals; spraying, and disease and pest control.

The opening chapter describing tree structure and growth gives the basic reasons for the various phases of tree care, included among special procedures are the most modern chemical and antibotic treatments for tree disease and insect control.

Each chapter is filled with enough facts, suggestions, and background so that the reader puts the book down with a deepened understanding of the habits and needs of trees which may come under his care.

Twenty-four pages of excellent photographs supplement the beautifully styled text.

More complete, more readable than any other book on this subject, *Tree Care* has been written for the tree owner who is interested in life-long beautification of his property, whether he possesses a single tree or a forest.

* * * *

TREES AND SHRUBS OF THE UPPER MIDWEST, by Carl O. Rosendahl. University of Minnesota Press, Minneapolis, Minn. 141 pgs., illus. $6.00.

Anyone who lives in the Upper Midwest or who has ever visited the region need hardly be told that this part of the country is blessed with a great abundance and variety of trees and shrubs. It is, therefore, a richly rewarding area for this particular aspect of nature study.

Dr. Rosendahl provides a guide for the identification of the species of trees and shrubs, both native and cultivated, to be found in the region that roughly extends south from Manitoba through Minnesota, most of Wisconsin, the eastern half of the Dakotas, and parts of Iowa, Illinois, and upper Michigan. He gives the geographic distribution, within this area, of the different varieties of trees and shrubs. Of partcular interest to gardeners and home landscape planners is the information he gives about the qualities, uses, and adaptability of the various species.

This volume is a devision and expansion of *Trees and Shrubs of Minnesota* by Rosendahl and Butters, which has long been out of print. Many changes have been made in the scientific or technical names of plants since the earlier book was published, and all botanical names have been brought up to date in the present volume. Technical terms are explained for the non-professional, and there is a handy glossary of terms. In all, some 345 species and 75 varieties, forms, and hybrids are described. In addition to the identification keys and descriptions, there are some 260 illustrations to help in identifying speciments. Careful instructions are given for the use of the keys. Throughout, the text is simple, and yet, since there is no sacrifice of scientific accuracy, professional botanists will find the book extremely useful also.

* * * *

AUSTRALIAN TREE PORTRAITS, by Charles P. Mountford. Cambridge University Press, 32 E. 57th St., New York 22. 69 pgs., beautifully illus. $8.50.

Thirty superb photographs of Australian trees, selected by Charles P. Mountford from the collection of a lifetime. These trees have been chosen for their beauty, dignity and character; and in some cases they are also varities or curiosities. They range from the Desert Kurrajong, seldom seen even by botanists until modern travel opened up the inland and the north, to the Coastal Tea-tree of the southeast; from the Snow Gum of the Australian Alps to a Eugenia from western Arnhem Land, which has not yet been fully classified by the botanists, nor even acquired a common name; from the Cabbage Palm of the tropical swamps to the Coastal Banksias of the Victorian beaches; from the Corkwood and Mulgas of the dry lands to the Stringybarks, Spotted Gums and She-oaks, which need a much higher rainfall. They include also the Candlebark and Dead Finish, the Myall, the Paper-bark and the Desert Oak; and there is the Coolibah, whose name all Australians know, but which very few have actually seen; and the Ghost Gum of the Centre, first found in Papua, and probably one of the most beautiful trees in the whole continent.

Each photograph is accompanied by a description of the nature and habitat of the tree, together with excellent line drawings of flower, fruit and leaf by Miss Gwen Walsh.

Position Wanted as Park Supt. or City Arborist

Lifetime experience and College trained in - Horticulture, Landscape - 2 years as city forester

BOX MMB
TREES MAGAZINE
OLMSTED FALLS, OHIO

Subscribe To TREES Magazine

$2.00 one year—
$5.00 three years
Foreign—$2.50 per year
Olmsted Falls, Ohio

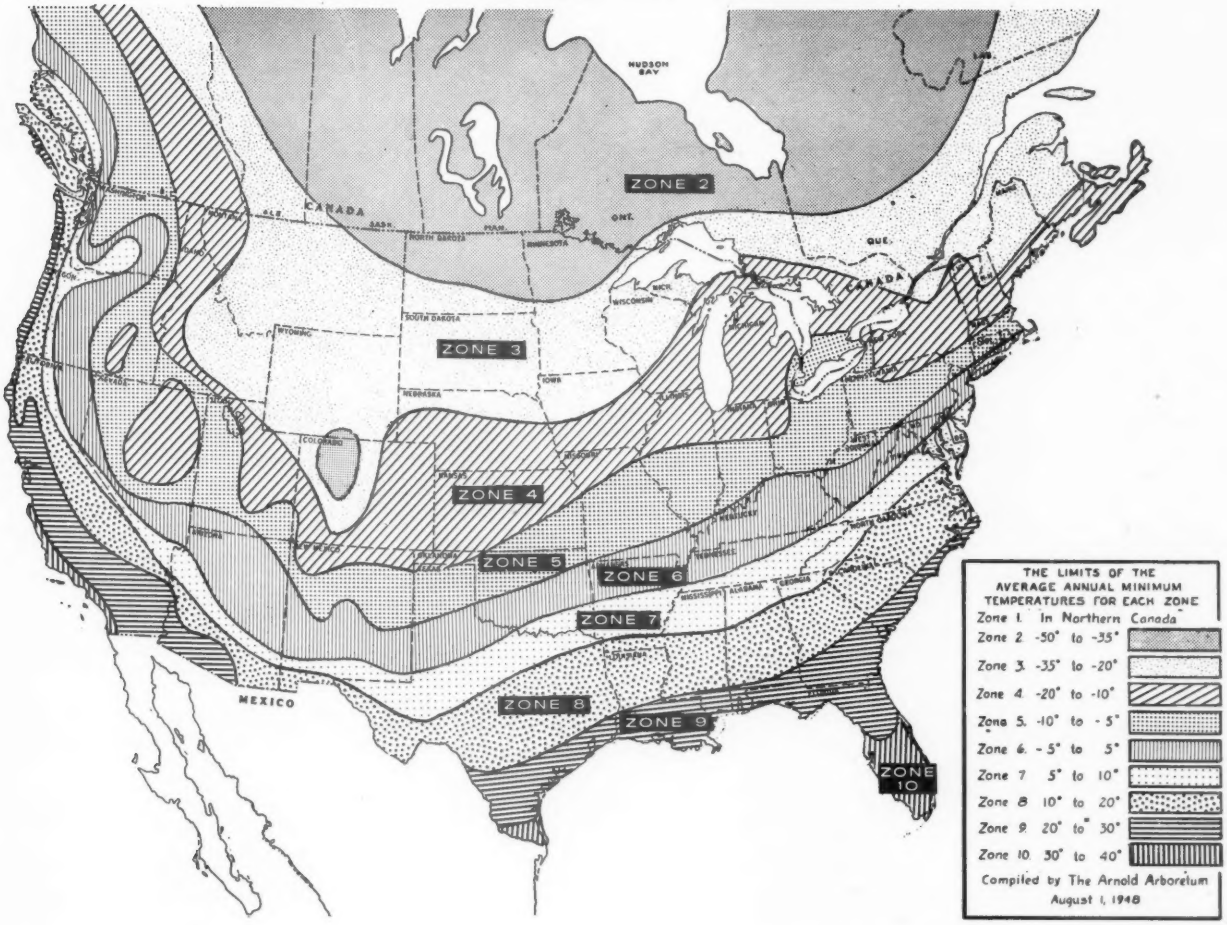
POSITION WANTED

Forester, B.S.F., 1949, New York State College of Forestry. Age 38. Married, three children. Over seven years experience with tree expert company. Experienced in municipal tree removal, brush spraying, tree spraying, telephone line trimming and private tree surgery. Desire location in central New York, but will consider others. Member of S.A.F. and N.Y.S. Arborists Association."

BOX SJN,
TREES MAGAZINE
Olmsted Falls, Ohio

WHERE TAILORED TREES FIT

HARDINESS ZONES of the UNITED STATES and CANADA



In the event you did not have a copy of this standard Hardiness Zones map we thought you might be interested in having one for your office. All trees listed in our catalog are marked for the Zone in which they will stand the extremes of cold. A Zone 3 tree may be planted, in some species, to Zone 7 or lower.

Order Now For Fall

Buisman Elm 4, Irish Norway Maple 3, Crabapples 3, Lavalle Hawthorn 4, Idaho Locust 3, Modesto Ash 4, Globe Locust 3, Globe Hawthorn 3, Cleveland Norway Maple 3, Double White Thorn 3, Littleleaf Linden 3.

SEND FOR NEW CATALOG

Edward H. Scanlon & Associates

"The Tailored Tree Nursery"

7621 Lewis Road Olmsted Falls, Ohio

Phone ADams 5-2357

"The Nations Street Tree Capitol"

RETURN POSTAGE GUARANTEED
Trees Magazine, 7621 Lewis Rd.
Olmsted Falls, Ohio

Postmaster: If addressee has moved and new address is known, notify sender on Form 3547, postage for which is guaranteed.

Mr. George A. Drew Jr.,
Supt. of Parks,
Park Comm. Office,
Fairfield, Conn.

Sec. 34.66 P.L.&R.
U. S. POSTAGE
PAID
Olmsted Falls, Ohio
Permit No. 12

SAVE ON COST OF
BRUSH REMOVAL
with

ASPLUNDH CHIPPERS!

Made by tree men for tree men, only Asplundh Chippers have been *engineered, developed and proven by the largest tree company in the world.*

Now even faster and more powerful than ever, Asplundh's new design features an enlarged feed opening that increases brush consumption by 15%, a flywheel of greater diameter for more powerful chipping action. They'll chip more brush in less time than any other chipper made . . . an obvious cost-saving to you.

You benefit in many ways when you use an Asplundh Chipper. Its unique simplicity of design permits blade changes right on the job without special equipment — with less "down time", lower maintenance costs. It is the only chipper with tapered blades and wedges that insure positive locking action — absolute safety in operation.

Yes, in every way, your cost of brush disposal is less when you use Asplundh Chippers.

ASPLUNDH CHIPPER COMPANY
505 York Road, Jenkintown, Pa. Dept. TI

☐ Send FREE BOOKLET,
The Modern Approach to the Brush Problem
☐ Arrange FREE demonstration

NAME .....
ADDRESS .....
CITY ..... ZONE .... STATE .....

Get complete information; free demonstration.
Clip and mail coupon today.

BY ACTUAL TEST THE FASTEST CHIPPER MADE